Hill-Rom® Air-Shields
A HILLENBRAND INDUSTRY

SERVICE MANUAL

ISOLETTE® INFANT INCUBATOR

LIMITED

WARRANTY

The product being described in this manual is warranted against defects in materials or workmanship for one year from the date of shipment from Hill-Rom® Air-Shields, Hatboro, with the following exceptions:

All consumable and disposable products are guaranteed to be free from defects upon shipment only.

Calibrations are considered normal maintenance and are not included in the 1 year warranty.*

During the warranty period any defective parts other than those listed above will be replaced at no charge to the customer. There will be no labor charge for replacing the parts within the continental U.S.

This warranty is rendered void and Hill-Rom® Air-Shields cannot be held liable for conditions resultant therefrom if:

1. Damage to the unit is incurred as a result of mishandling.
2. The customer fails to maintain the unit in a proper manner.
3. The customer uses any parts, accessories, or fittings not specified or sold by Hill-Rom® Air-Shields.
4. Sale or service is performed by a non-certified service/dealer agency.

This warranty is in lieu of all other warranties, expressed or implied, and Hill-Rom® Air-Shields shall in no event be liable for incidental or consequential damages including loss of use, property damage, or personal injury resulting from breach of warranty.

*The Accreditation Manual for Hospitals requires each piece of equipment to be tested prior to initial use and at least annually thereafter. To comply with this standard, we recommend that you participate in our Preventive Maintenance Program during the warranty period. This service can be performed by certified technicians through our Product Service Group and authorized dealers.

SERVICE

For optimal performance, product service should be performed only by qualified service personnel. Product Service Group instrumentation specialists are located throughout the United States and are dispatched for required maintenance by calling 800-523-2404. Customers outside the U.S. should contact their local factory-authorized Hill-Rom® Air-Shields' distributor for service.

Hill-Rom® Air-Shields
A HILLENBRAND INDUSTRY

330 Jacksonville Road, Hatboro, PA 19040

CAT. NO. 83 990 49 -3
E 1 2 3 4 5 6 7 8 9
A 1 2 3 4 5 6 7 8 9

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Change 2 3/98

PLEASE READ

Please check the A page for change information.

Since Air–Shields conducts a continuous product improvement program, circuit and component improvements are sometimes incorporated into equipment before they can be incorporated into the printed manuals. When this occurs, changed material is provided on separate sheets at the rear of the manual or under separate cover in the form of a change package. Changed material on each page of text is indicated by a vertical bar in the margin next to the changed material, as shown on the right.

THIS MANUAL CONTAINS PROPRIETARY INFORMATION. REPAIRS AND AUTHORIZED MODIFICATIONS SHOULD BE PERFORMED ONLY BY QUALIFIED SERVICE PERSONNEL TO MAINTAIN YOUR WARRANTY AND TO AVOID CREATING SAFETY HAZARDS. WE CANNOT ASSUME RESPONSIBILITY FOR ANY CONDITIONS AFFECTING THE PROPER OPERATION OF THIS EQUIPMENT WHICH MAY RESULT FROM UNAUTHORIZED REPAIR OR MODIFICATION.

NOTE ON REPLACEMENT PARTS

Some parts used in your equipment may be different than those which appear in the Parts List of this manual. This sometimes occurs due to difficulty in parts procurement, but does not alter the function of the equipment. Order the part listed in the Parts List. Refer to Section 6 of this Manual for a listing of recommended spare parts.

NOTE: ALSO SEE PAGE 2.

LIST OF EFFECTIVE PAGES

PAGE NO.	CHANGE NO.	DATE OF ISSUE
Front Cover and Inside Front Cover	2	3/98
1 and 2	0	5/97
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v and vi	2	8/97
vii	0	5/97
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1–3	2	3/98
1–4	0	5/97
2–1 and 2–2	2	3/98
2–3 thru 2–7	0	5/97
2–8	2	3/98
2–9 thru 2–11	0	5/97
2–12 thru 2–14	2	3/98
2–15 thru 2–20	0	5/97
3–1 thru 3–20	0	5/97
3–21	1	8/97
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5–15 and 5–16	0	5/97
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6–7	0	5/97
6–8 thru 6–104	2	3/98
7–1 thru 7–17	0	5/97
7–18 thru 7–21	2	3/98
7–22	0	5/97

TABLE OF DEFINITIONS AND SYMBOLS

TECHNICAL DEFINITIONS

Incubator Temperature. Air temperature at a point 10 cm (3.9 in.) above and centered over the mattress surface.

Control Temperature. The temperature controller's set point selected by the user.

Average Incubator Temperature. The average of the maximum and minimum Incubator temperatures achieved during **Temperature Equilibrium**.

Incubator Temperature Equilibrium. The condition reached when the average **Incubator Temperature** does not vary more than 1.0 °C over a period of one hour. These measurements are taken at **Control Temperatures** of 32 °C and 36 °C.

Temperature Uniformity. The amount by which the average temperature at each of four points 10 cm (4 in.) above the mattress surface differs from the **Average Incubator Temperature** at **Incubator Temperature Equilibrium.**

Temperature Variability. The variability of the **Incubator Temperature** that will be observed over a one hour period after **Incubator Temperature Equilibrium** has been reached.

Temperature Rise Time. The time required for the **Incubator Temperature** to rise 11 °C, when the **Air Control Temperature** is at least 12 °C above ambient.

Temperature Overshoot. The amount by which **Incubator Temperature** exceeds **Average Incubator Temperature** at **Incubator Temperature Equilibrium** as a result of an increase in **Control Temperature** – additionally the **Incubator Temperature Equilibrium** shall be restored within 15 minutes as a result of an increase in **Control Temperature** value.

Temperature Correlation – Temperature Indicator vs Incubator Temperature:

The amount the air temperature indicator at **Incubator Temperature Equilibrium** differs from the **Incubator Temperature**.

Temperature Correlation – Incubator Temperature vs Control Temperature:

The amount the **Average incubator Temperature** in Air Mode at **Incubator Temperature Equilibrium** differs from the **Control Temperature.**

Temperature Correlation – Temperature Indicator vs Control Temperature:

The amount the air temperature indicator in Air Mode at **Incubator Temperature Equilibrium** differs from the **Control Temperature.**

Measurement Points – Measurements are taken at five points in a plane parallel to and 10 cm above the mattress surface. One point shall be 10 cm above the center of the mattress, the remaining four points shall be the centers of four areas formed by lines, which divide both the width and length in two parts.

NOTE, IMPORTANT, CAUTION, AND WARNING

NOTE: *A Note is inserted in text to point out procedures or conditions which may otherwise be misinterpreted or overlooked. A Note may also be used to clarify apparently contradictory or confusing situations.*

IMPORTANT: *Similar to a Note but used where greater emphasis is required.*

CAUTION: A Caution is inserted in text to call attention to a procedure which, if not followed exactly, can lead to damage or destruction of the equipment or improper operation.

WARNING: A Warning is inserted in text to call attention to dangerous or hazardous conditions inherent to the operation, cleaning, and maintenance of the equipment which may result in personal injury or death of the operator or patient.

SYMBOLS

Attention; consult accompanying documents.

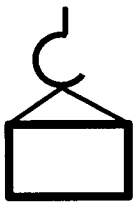
Type B equipment with an F type floating applied part.

Caution: Electric shock hazard. Refer service to qualified personnel.

AC power

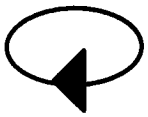
Protective earth (ground)

Caution, Hot Surface

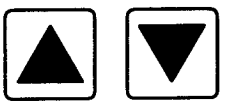


Weight Limit

Silence/Reset Key
Procedural Silence Key



Display Selection Key

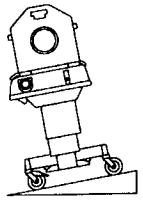


Increase and Decrease Keys

Parameter Selection Key

Alarm Indicator

Power Failure



Lock Casters when parked on an incline.

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SECTION 1
GENERAL INFORMATION

1.1 INTRODUCTION

This manual provides the instructions for installation, maintenance and repair of the **Isolette® Infant Incubator.**

This manual is intended for use only by trained, qualified service personnel. Instructions for the operation of the equipment are provided in a separate Operator's Manual.

1.2 DESCRIPTION

On the **Isolette® Infant Incubator**, Skin or Air Temperature Control is selected by a front panel key. Instrumentation includes digital displays for air and skin temperature, a trend display of two skin temperatures, air temperature, and heater power with user selectable intervals of 2, 4, 8, 12, and 24 hours. Optional Trend Displays of Oxygen Concentration, Weight and Humidity are also available. A comprehensive visual and audible alarm system is provided.

The **Isolette® Infant Incubator** also includes the following features:

- Oval Access Doors with a Quiet Latch.
- A Mattress Tilt Mechanism continuously variable from 0° to 12° from either end.

Options include:

- An Oxygen Control System which provides the means to monitor and control the oxygen concentration level within the Incubator hood environment.
- A Humidity System which monitors and controls the humidity level within the Incubator hood environment.
- A weighing platform located under the mattress measures the weight of an infant.
- A Fixed Height Pedestal/Stand.
- A Variable Height Pedestal/Stand.

1.3 OPTIONS

Options available for the **Isolette® Infant Incubator** are listed below and illustrated in Figure 1.1. Refer to Section 6 for Part Numbers, additional options, a list of operator replaceable parts and single use items.

- Deep Storage Compartment
- Shallow Storage Compartment
- High/Low Monitor Shelf
- I.V. Pole Assembly
- O_2 Tank Mount
- Ventilator Tubing Support

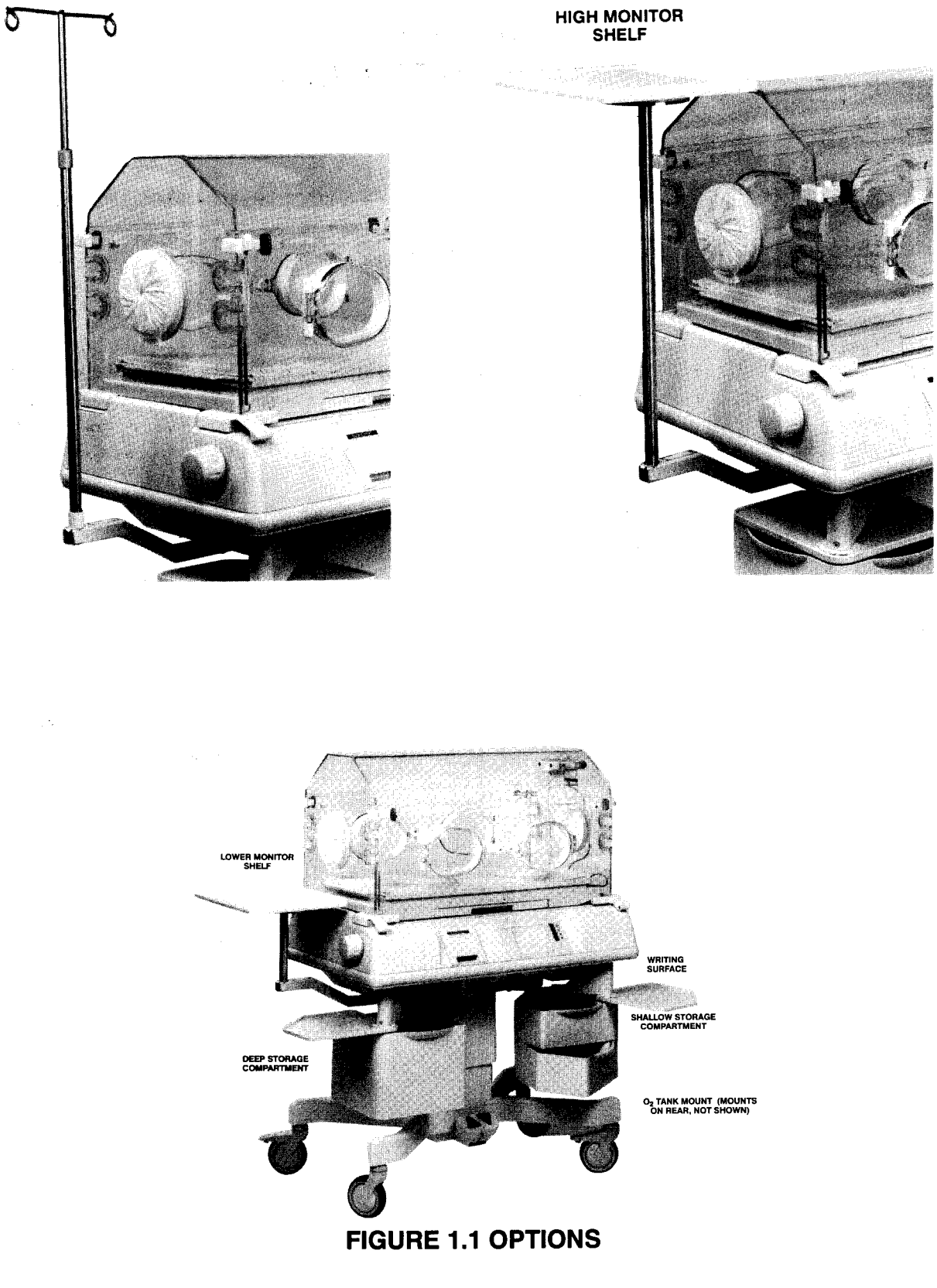


FIGURE 1.1 OPTIONS

1.4 MODEL IDENTIFICATION SERIES CHANGE

The locations of the Data Tags for the **Isolette® Infant Incubator**, Controller and the Fixed and VHA Pedestal stands are as follows:

Incubator–Rear of Shell Assembly

Controller–Top Panel

Fixed Pedestal Stand–Lower Column of the Stand

VHA Pedestal Stand–Lower Column of the Stand

The following example explains the content of the data tag:

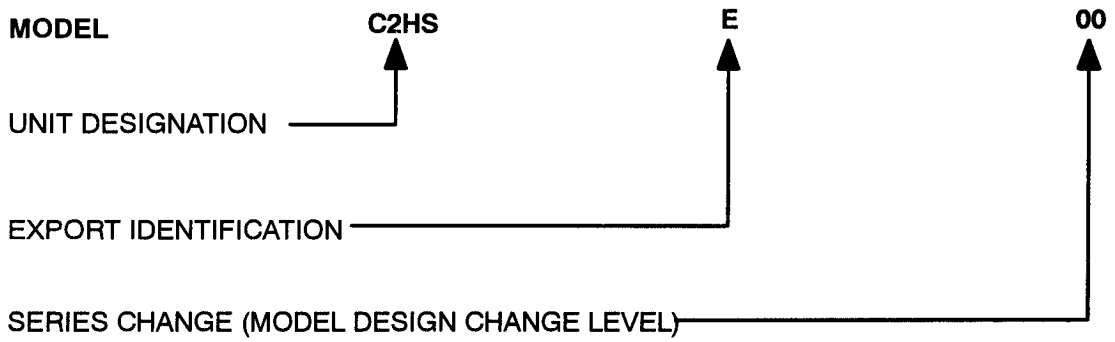


TABLE 1.1: SERIES CHANGE – ISOLETTE® INFANT INCUBATOR, HOOD/SHELL MODEL NO. C2HS–1 AND C2HS–1C

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Access Panel Slide Latches replaced by Pawl Latches.	83 200 77, 78, 79, 80 and 81. 83 300 76, 83 300 77.

TABLE 1.2: SERIES CHANGE – ISOLETTE® INFANT INCUBATOR, CONTROLLER MODEL NO. C2C–1 AND 1E

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Hardware Changes	83 006 70, 71; 83 006 80, 81; 83 006 91
02	Fan Motor Drive Circuitry	83 006 70, 71; 83 006 80, 81; 83 006 91

TABLE 1.3: SERIES CHANGE – ISOLETTE® INFANT INCUBATOR, FIXED PEDESTAL STAND MODEL NO. C2STD–1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Replace Upper and Lower Column and Extrusion with Weldment.	83 401 02, 83 420 01

TABLE 1.4: SERIES CHANGE – ISOLETTE® INFANT INCUBATOR, FIXED PEDESTAL STAND MODEL NO. C2STD–2

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None

TABLE 1.5: SERIES CHANGE – ISOLETTE® INFANT INCUBATOR, VHA PEDESTAL STAND MODEL NO. C2VHA–1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None

TABLE 1.6: SERIES CHANGE – HUMIDITY SYSTEM, MODEL C2RH–1

SERIES NO.	DESCRIPTION	ITEMS/ASSEMBLIES AFFECTED
00	Original Design	None
01	Changed the float and spacers on the Housing Float Assy	83 611 70

SECTION 2
INSTALLATION

2.1 GENERAL

This section provides assembly procedures for the Hood/Shell and the Pedestal/Stand along with procedures for the Accessories: Oxygen, Weight and Humidity Systems.

Accessories such as Storage Compartments, Shelves and .IV. Pole are provided with their own instructions.

2.2 UNPACKING

Typically, the Pedestal/Stand (or optional Variable Height Pedestal/Stand) and the Hood/Shell Assembly are shipped in separate cartons. When removing the equipment from the cartons, take care not to scratch or otherwise damage unprotected surfaces. Remove all packing materials from the shell assembly.

2.3 ASSEMBLING THE HOOD/SHELL ON THE PEDESTAL/STAND

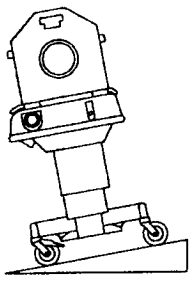
A. **MOUNT THE HOOD/SHELL ON THE PEDESTAL** using the four 1/4–20 x 1.75 inch Nylok Bolts provided (Figure 2.1).

IMPORTANT: *The Hood/Shell and the Pedestal/Stand are keyed such that the Hood/Shell can only be mounted on the Pedestal when the Hood/Shell Power Cord Receptacle is located on the same side as the line cord coming out of the Pedestal/Stand.*

WARNING: The Incubator must be attached to the Pedestal/Stand using the bolts provided. Failure to do so could result in the Incubator separating from the Pedestal/Stand if sufficiently tilted, particularly with the hood open.

B. **CONNECT THE PEDESTAL/STAND POWER CORD TO THE INCUBATOR** Power Cord Receptacle (Figure 2.1). Remove the Wing Nut next to the Power Cord Connector. Place the Ring Lug of the Controller Ground Lead on the stud. Replace the Wing Nut.

C. **CONNECT THE PEDESTAL/STAND POWER CORD** to the wall receptacle.



WARNING: To prevent the Incubator from sliding when parked on an incline, the Pedestal/Stand front locking casters must be facing down the incline and locked.

Hardware	Part Number
Screw, 1/4 – 20 x 1.75 Cap Hex SS Nylok (Qty 4)	99 059 11

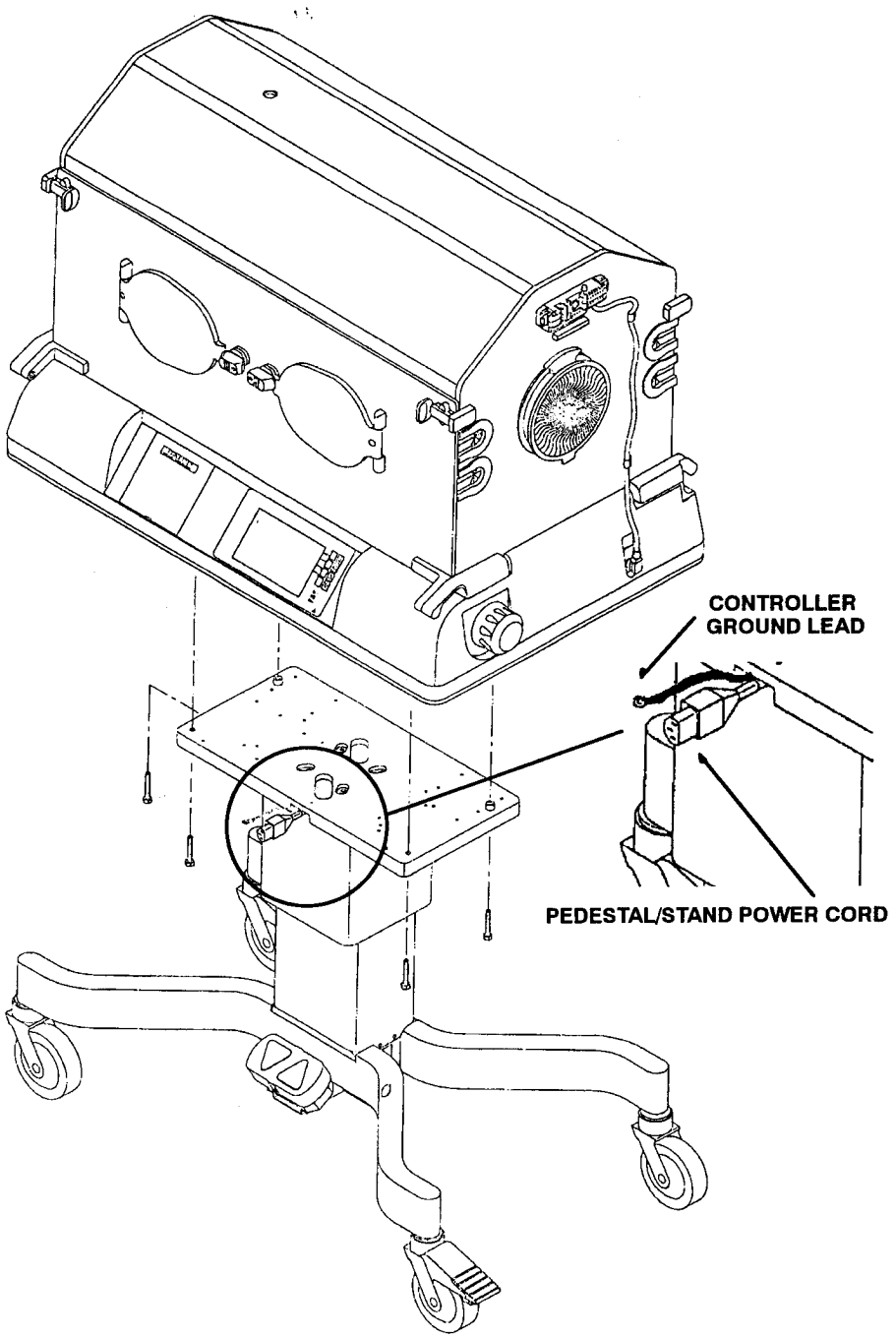


FIGURE 2.1: ASSEMBLING THE HOOD/SHELL ON THE PEDESTAL/STAND

Change 2

2.4 INSTALLATION OF ACCESSORIES

2.4.1 INSTALLATION OF THE WEIGHING SCALE

A. OPEN THE ACCESS DOOR OF INCUBATOR.

B. REMOVE THE MATTRESS from the Incubator.

C. PLACE THE SCALE IN THE INCUBATOR (Figure 2.2). Make sure the Scale/Sensor Module Cable is located on the right side of the Incubator. Replace the Mattress in the scale tray.

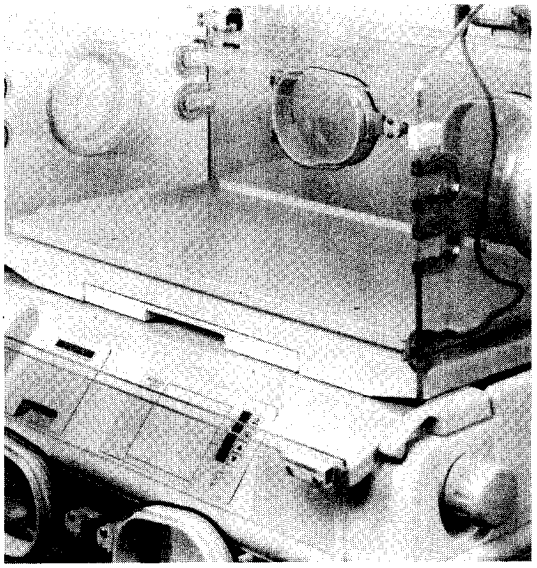
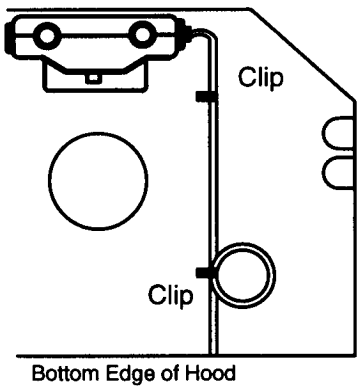


FIGURE 2.2: INSTALLATION OF THE WEIGHING SCALE

D. CONNECT THE SCALE/SENSOR MODULE CABLE to the Weight Connector on the Sensor Module.

E. SECURE THE SCALE/SENSOR MODULE CABLE (Refer to Figure 2.3) to the Incubator End Wall using the cable clips provided on the inside of the Incubator wall.

IMPORTANT: ***MAKE SURE THERE IS SUFFICIENT CABLE SLACK*** *between the edge of the Hood and the Scale to permit the Hood to be raised to its full open position (Paragraph 2.6.2, Step B) and the Mattress Tray to be fully withdrawn from the Hood (Paragraph 2.6.2, Step H).*



WARNING: Ensure all sensor leads are properly routed. Utilize cable management clips to avoid entanglement and possible injury.

FIGURE 2.3: SCALE/SENSOR MODULE CABLE ROUTING

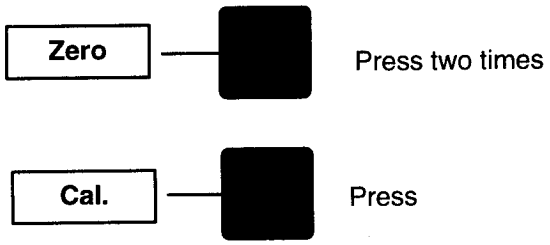
2.4.2 WEIGHING SCALE CALIBRATION

Upon installation and every 6 months thereafter, the Scale should be calibrated using a calibrated weight (5 Kg Weight, Part Number 03 310 16) and the following procedure:

IMPORTANT: *The mattress should be level, i.e., not in the Trendelenburg or Reverse Trendelenburg position.*

A. SELECT DISPLAY 2 and press the WEIGH Softkey.

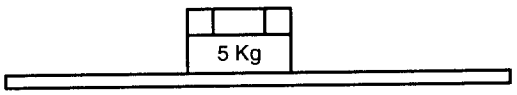
NOTE: *If necessary, remove any objects from the mattress before pressing the ZERO Softkey.*

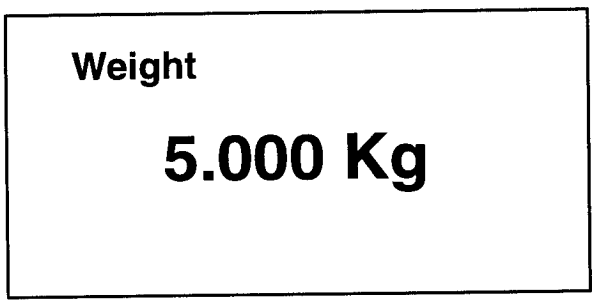


Weight
wait

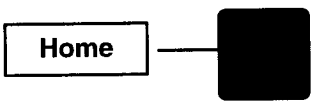
Weight

Place Calibrated Weight on Mattress 5 Kg





Remove Weight and press Home



2.4.3 INSTALLATION OF THE OXYGEN SYSTEM

A. **REMOVE THE SENSOR MODULE** from the Hood by withdrawing it until it stops. Pull out on the clip located on the left side of the Module and remove the Module from the Hood.

B. **REMOVE THE OXYGEN SENSOR COVER** (Figure 2.4). Retain the hardware.

C. **WITHDRAW THE SENSOR CELL CONNECTORS** from inside the Sensor Module Housing.

D. **SCREW THE SENSOR CELLS INTO THE OXYGEN CELL MOUNTING PLATE PROVIDED.**

E. **CONNECT THE SENSOR CELLS** to the Sensor Module.

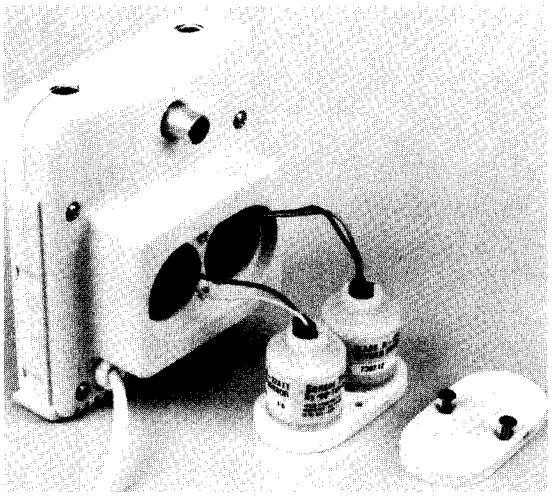


FIGURE 2.4: INSTALLATION OF OXYGEN SENSOR CELLS

F. **INSTALL THE OXYGEN CELL MOUNTING PLATE** on the Sensor Module. Replace the Sensor Module in the Hood.

G. **REMOVE THE PANEL NEXT TO THE FILTER COVER**. Find the oxygen hose. Find the solenoid leads and release them from the clip attached to the Shell wall (Figure 2.5).

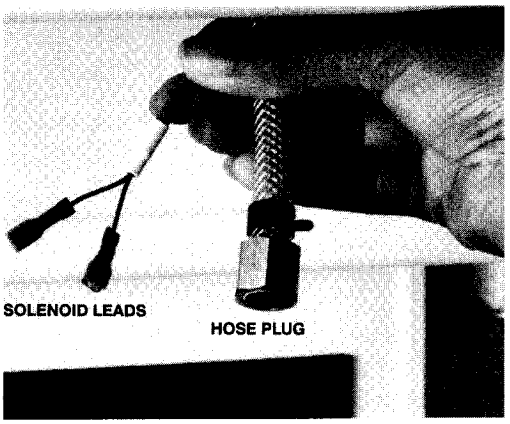


FIGURE 2.5: OXYGEN HOSE AND SOLENOID CONNECTORS

H. **RELEASE THE PLUG FROM THE END OF THE OXYGEN HOSE** by squeezing the retaining clamp with pliers and sliding it up the hose. Remove the plug and discard it.

I. **CONNECT THE LEADS TO THE CONTROL VALVE ASSY SOLENOID.** Connect the oxygen hose to the barb fitting on the Filter Assembly. Lock it in place with the retaining clip (Figure 2.6).

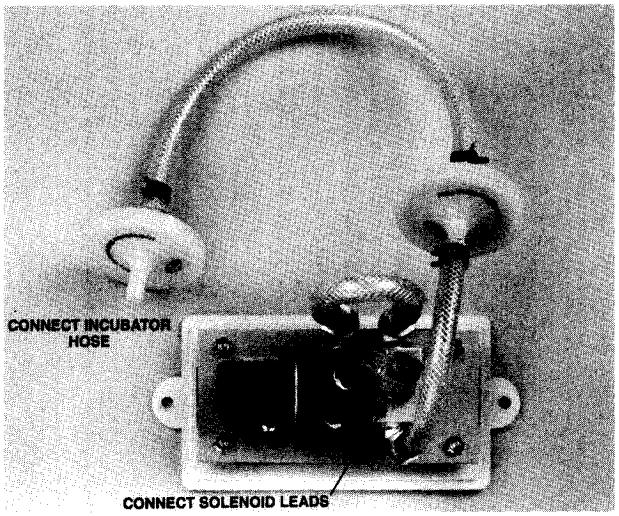


FIGURE 2.6: OXYGEN HOSE AND SOLENOID CONNECTORS INSTALLED

J. **MOUNT THE CONTROL VALVE ASSY** and the Hose Hanger on the Shell using the two 8 – 32 screws provided.

K. **REFER OF PARAGRAPH 2.5** and activate the Oxygen System.

L. **REFER TO PARAGRAPH 4.3 OXYGEN SENSOR CALIBRATION** and calibrate the Oxygen System at 21%.

2.4.4 INSTALLATION OF 100% OXYGEN CALIBRATION FIXTURE

A. **REMOVE THE SENSOR MODULE** from the Hood by withdrawing it until it stops. Pull out on the clip located on the left side of the Module and remove the Module from the Hood.

B. **REMOVE THE EXISTING 21% CALIBRATION FIXTURE** from the Hood (the 21% fixture is located under the Sensor Module opening). Retain the hardware.

C. **MOUNT THE 100% CALIBRATION FIXTURE** directly under the Sensor Module opening using the screws retained in Step B above (Figure 2.7).

D. **REPLACE THE SENSOR MODULE.** Refer to Paragraph 2.5 and select the 100% Calibration Level.

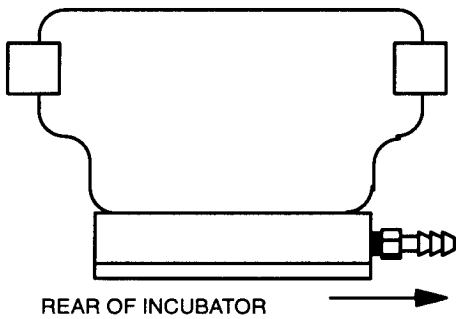


FIGURE 2.7: INSTALLATION OF THE 100% OXYGEN CALIBRATION FIXTURE

E. **REFER TO PARAGRAPH 5.2.1 OXYGEN SENSOR CALIBRATION** and calibrate the Oxygen Sensor using the 100% Calibration Procedure.

2.4.5 INSTALLATION OF THE HUMIDITY SYSTEM

IMPORTANT: *To prolong the useful life of the Humidity Module, use only distilled water. Sterile water is not an acceptable substitute for distilled water.*

A. REMOVE THE MATTRESS TRAY, Mattress Tilt Bars, Main Deck and Heater/Impeller Cover (Figures 4.1 through 4.4).

B. REMOVE THE HEATER RADIATOR by unscrewing it (Figure 4.5).

C. REMOVE THE HUMIDITY OPENING COVER by inserting a small screw driver or similar device in the slot at the bottom center of the cover (Figure 2.8).

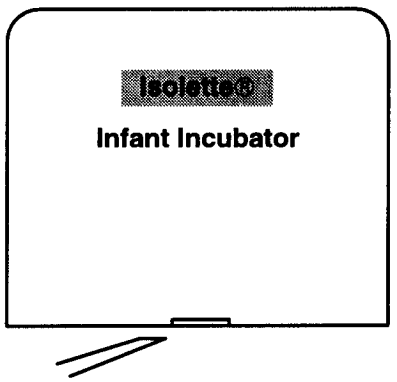


FIGURE 2.8: REMOVING THE HUMIDITY OPENING COVER

D. REMOVE THE HOLE PLUG at the bottom of the Heater/Impeller Cavity (Figure 2.9). The Hole Plug is secured to the Shell by a Wing Nut and Flat Washer inside the Shell.

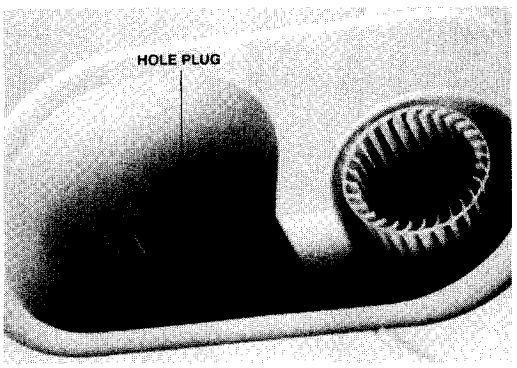


FIGURE 2.9: REMOVING THE HOLE PLUG

E. FIND THE HUMIDITY CABLE and connect it to the Humidity Control Module (Figure 2.10).

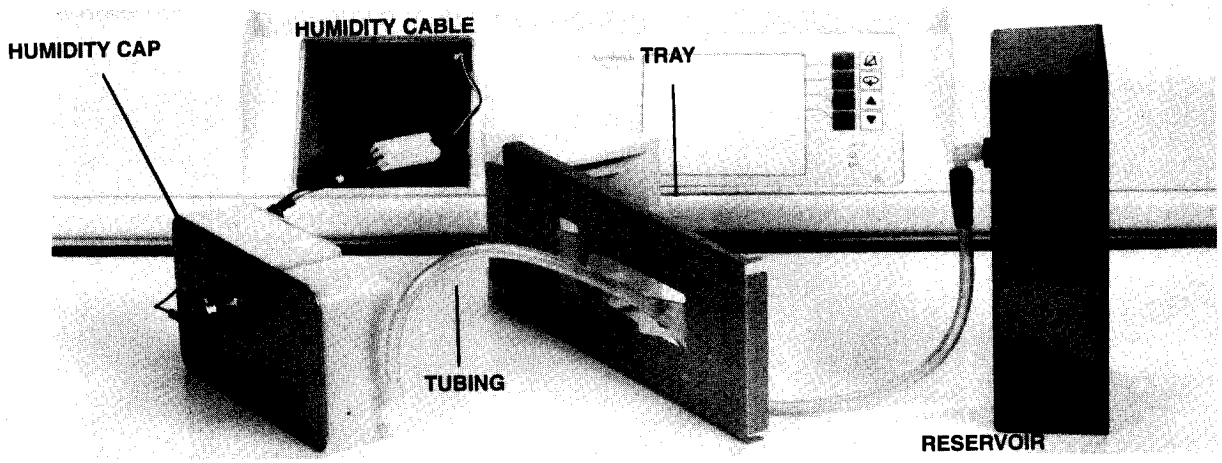


FIGURE 2.10: THE HUMIDITY CONTROL SYSTEM

F. REMOVE THE HUMIDITY CAP and Metal Washer from the top of the Humidity Module. Leave the Polypropylene Washer in place.

G. THREAD THE HUMIDITY HOSE THROUGH THE ROUND HOLE on the Humidity Tray and connect it to the barb fitting on the side of the Humidity Module.

H. INSERT THE HUMIDITY MODULE into the Shell. Place the Humidity Cap Collar in the hole vacated by the Hole Plug in Step D above. Secure the Humidity Module to the Shell using the Humidity Cap (Figure 2.11) and the Metal Washer.

I. PLACE THE HUMIDITY HOSE IN THE RETAINING CLIP located on the bottom of the Humidity Tray opening.

J. INSERT THE HUMIDITY TRAY into the Shell.

K. CONNECT THE HUMIDITY HOSE to the Reservoir and install the Reservoir in the Humidity Tray (Figure 4.6).

L. REASSEMBLE THE INCUBATOR.

M. REFER OF PARAGRAPH 2.5 and activate the Humidity System.

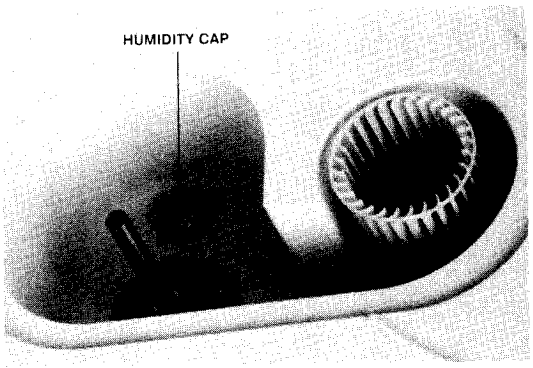


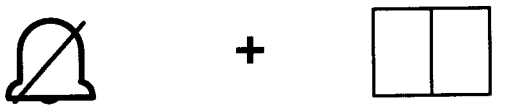
FIGURE 2.11: THE HUMIDITY SYSTEM CAP

Change 2

2.5 INSTALLATION/SET–UP MENU

The Installation/Set–Up Menu provides the means to activate or deactivate the Humidity System, Oxygen System and Skin Control Mode. The Skin Temperature Alarm Limit may be set to either ± 0.5 °C or ± 1.0 °C and the Oxygen Calibration Level may be set to either 100% or 21%. In addition, the appropriate language (English, French, German, Spanish or Italian) may be selected along with weight units of kilograms or pounds.

To enter the Set–Up Menu, turn the Controller off and press and hold the Silence/Reset Key while simultaneously turning on the Controller Power Switch.



PRESS AND HOLD **POWER**

	Press Display Selection Key to highlight desired option, parameter or mode	**Press Up Arrow to select YES (Activate), 100% ,1.0 °C, Language or Lb**	**Press Down Arrow to select NO (Deactivate), 21%, 0.5°C Language or Kg**
Humidity option		YES	NO
Oxygen option		YES	NO
Oxygen Calibration Level		100%	21%
Skin Temp Alarm Limit		1.0°C	0.5°C
Skin Control Mode		YES	NO
Language		English	Italian
		French	Spanish
		German	German
		Spanish	French
		Italian	English
Weight Units		Lb	Kg

To exit Press **Display 1**

2.6 OPERATIONAL CHECKOUT PROCEDURE

The Operational Checkout should be performed before the Incubator is first placed into service and after any disassembly for cleaning or maintenance.

WARNING: The Incubator should not be used if it fails to function as described below. Service should be referred to qualified personnel.

2.6.1 CONNECTING THE INCUBATOR TO THE AC LINE AND CHECKING THE POWER FAILURE ALARM

CAUTION: Make sure that the building power source is compatible with the electrical specifications shown on right side of the Incubator and VHA Pedestal/Stand. For proper grounding reliability, connect the power cord only to a properly marked 3–wire hospital–grade or hospital–use receptacle. Do not use extension cords.

Observe the following CAUTIONS when the Incubator is mounted on a VHA Pedestal/Stand.

CAUTION: HEAVY EQUIPMENT – To prevent injury or damage to the Incubator Pedestal/Stand when transporting, a person of sufficient strength should be employed to adequately control the Incubator.

CAUTION: Always lower the Incubator to its lowest position prior to transport for optimum stability.

IMPORTANT: *Before attempting to perform this procedure, refer to the Operator's Manual, Paragraph 4.1,* ***CONTROLS AND INDICATORS.***

A. CONNECT THE PEDESTAL/STAND AC POWER CORD AND APPLY POWER

CONNECT THE PEDESTAL/STAND POWER CORD TO AN AC SOURCE.

DEPRESS THE POWER SWITCH ON THE PEDESTAL/STAND.

DEPRESS THE POWER SWITCH ON THE INCUBATOR. When initially turned on, the unit performs a self–test indicated by the flashing Hour Glass. All indicator lamps light and the audible alarm is pulsed. If the unit fails the self–test, the audible alarm will sound and one or more of the following messages will appear in place of the Trend Display on Display Number 1.

Controller Fail
EEPROM Fail
Sensor Module Failure

Refer the unit to service.

B. CHECK THE POWER FAILURE ALARM

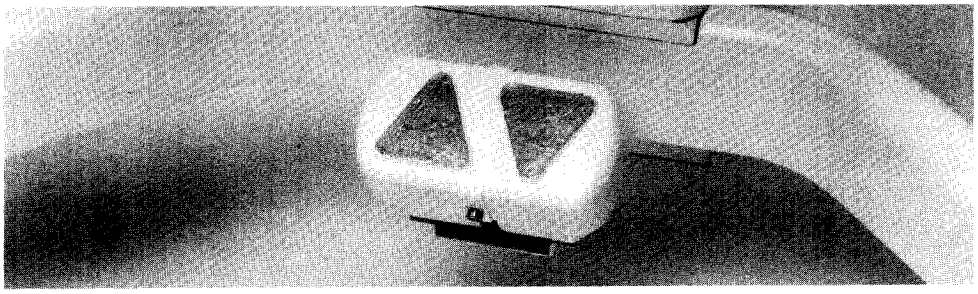
DISCONNECT THE PEDESTAL/STAND POWER CORD from the power source. The power failure alarm should sound and the **Power Fail** Indicator on the Controller should light. Reconnect the power cord.

After self–test, Display Number 1 will appear. Refer to Paragraph 4.4 of the Operator's Manual and set the Air Set Temperature to 35 °C. Allow the unit to operate while performing the hood/shell checks.

2.6.2 OPERATIONAL CHECKOUT – HOOD/SHELL AND VHA PEDESTAL/STAND, IF SO EQUIPPED

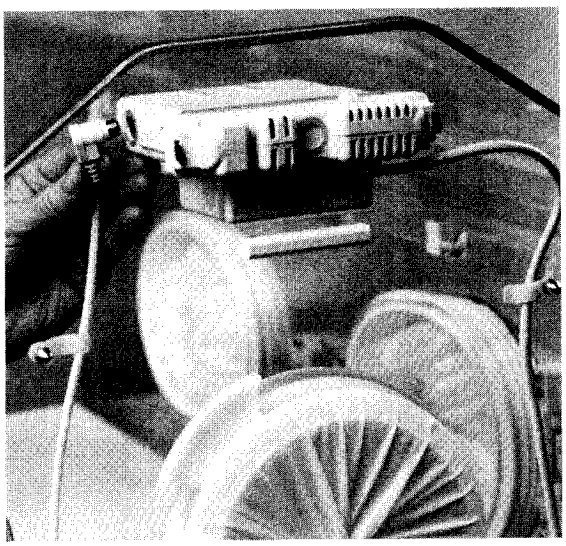
Perform this Operational Checkout Procedure along with the Operational Checkout Procedure provided for the Controller before first placing the Incubator into service and after any disassembly or maintenance.

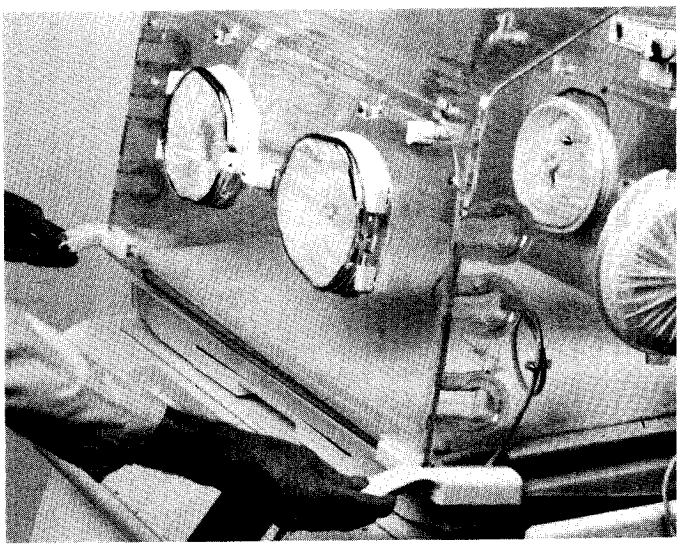
A. CHECK THE VHA PEDESTAL/STAND IF SO EQUIPPED



Turn on the Main Power switch. Use foot to press the Up Arrow of the VHA Pedestal/Stand Front Up/Down switch to raise the stand to the maximum height. Press and hold the Down Arrow of the VHA Pedestal/ Stand Up/Down Switch to lower the stand to the minimum height. Repeat using the Rear Up/Down switch. Verify the stand operates smoothly and readjust to desired height.

B. CHECK THE HOOD OPERATION

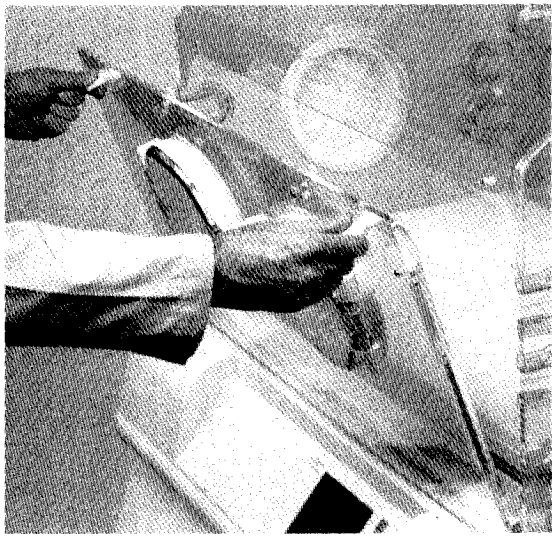


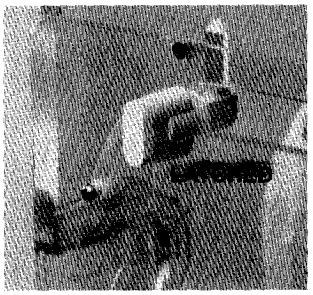


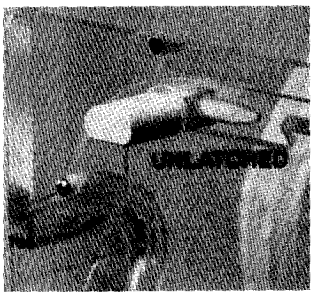
Disconnect the Weighing Scale Cable from the Sensor Module. Slowly tilt the Hood back until the Hood comes to rest. Close the Hood. Replace the cables on the Sensor Module. Replace the Weighing Scale Cable on the Sensor Module.

Change 2

C. CHECK THE ACCESS PANEL



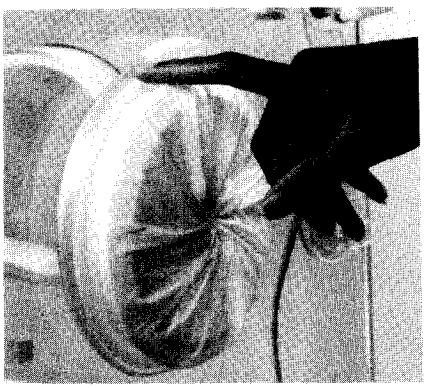




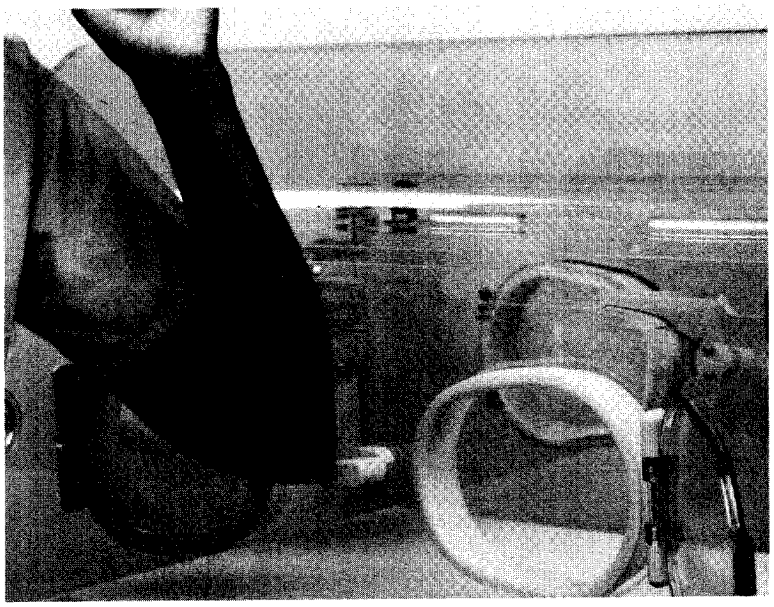
Rotate the Pawl Latches and open the Access Panel. Pivot the Access Panel to the full open position (hanging straight down). Check the Rear Access Panel, if so equipped. Close the Access Panel and check that the latches are properly secured to avoid accidental opening of the panel(s).

D. CHECK THE IRIS ENTRY PORTS

Rotate the outer ring of the Iris Port(s); the iris should open and close as rotation is continued through 360 degrees.

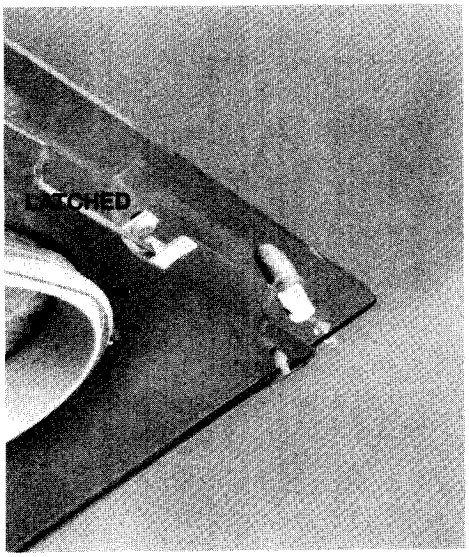


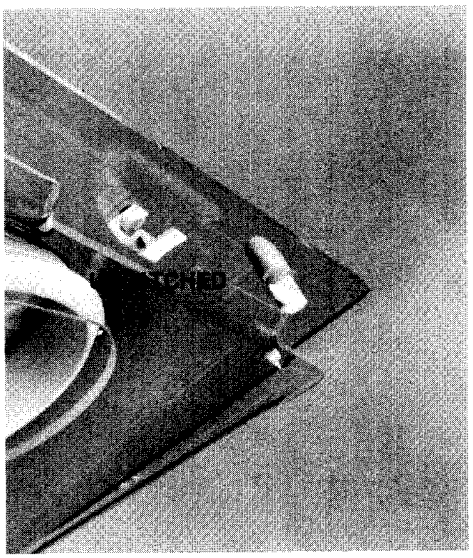
E. CHECK THE ACCESS DOOR LATCHES AND GASKETS



Press the door release of each Access Door. The Access Door should swing open. Close the doors and check for proper latching and quietness. Check that the Access Door Gaskets are placed properly on the Inner and Outer Walls (refer to Figure 4.10).

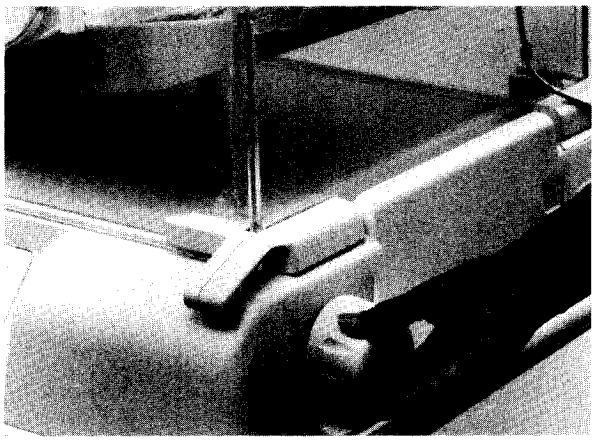
F. CHECK THAT THE INNER WALLS ARE PROPERLY LATCHED





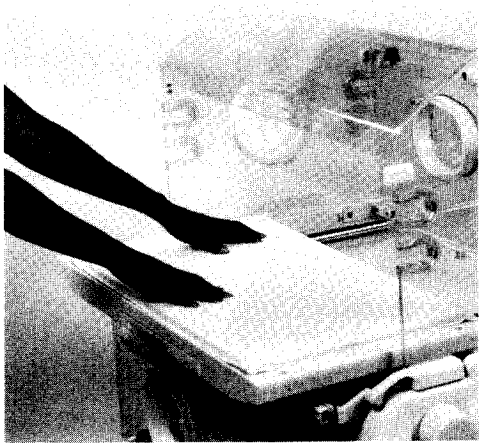
Open the Access Panel(s) and check that the front and rear Inner Walls are properly latched.

G. CHECK THE MATTRESS ELEVATORS



Rotate the right mattress tilt mechanism knob counterclockwise until it stops. The right end of the mattress should be at a 12° angle. Rotate the knob clockwise until it stops. The mattress should be level. Repeat the procedure by turning the left mattress knob clockwise, then counterclockwise.

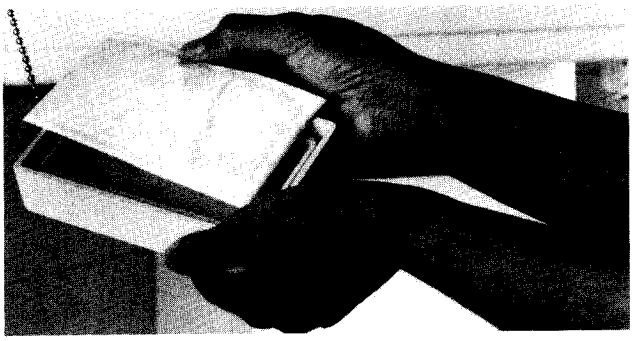
H. CHECK MATTRESS TRAY OPERATION



Slide out the Mattress Tray to the fully extended position. Carefully lean on the Mattress Tray to make sure it is properly supported to provide a firm infant platform. Return the mattress and close the door.

I. CHECK THE AIR INTAKE MICROFILTER

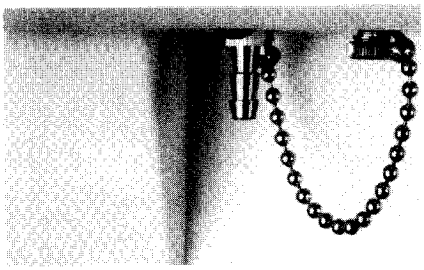
WARNING: A dirty Air Intake Microfilter may affect oxygen concentrations and/or cause carbon dioxide build–up. Check filter on a routine basis and change at least every three months.



Loosen the two thumbscrews of the Air Intake Filter Cover and remove the cover. Inspect the microfilter; if visibly dirty, replace it. Refer to Section 4, Maintenance, for additional instructions. Replace the Air Intake Filter Cover.

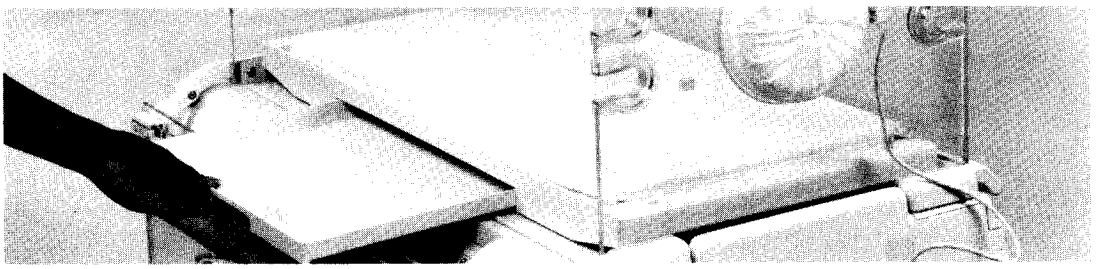
J. CHECK THE AIR/OXYGEN SYSTEM

Introduce a carefully measured 9 lpm of oxygen into the Oxygen Input connector, then monitor with a calibrated oxygen analyzer levels within hood to verify that they reach the predicted level as indicated on the Rear Panel of the Incubator (9 lpm in equals 50–70%).



K. CHECK THE X–RAY TRAY

Open the Access Panel and withdraw the X–Ray Tray.



L. THE HOOD/SHELL OPERATIONAL CHECKOUT IS COMPLETE

2.6.3 OPERATIONAL CHECKOUT – CONTROLLER

WARNING: The Incubator should not be used if it fails to function as described. Service should be referred to qualified personnel.

Perform this Operational Checkout Procedure along with the Operational Checkout Procedure provided for the Hood/Shell before first placing the Incubator into service and after any disassembly or maintenance.

A. CHECK THE LOW AIR FLOW AND HEATER FAILED ALARMS

WARNING: The heater radiator can be sufficiently hot to cause burns. Permit the heater radiator to cool for at least 20 minutes before attempting this procedure.

Set the Power Switch to OFF. Remove the Mattress Tray and Main Deck from the Incubator. Remove the cover from the Heater and Fan Motor well. Remove the Impeller from the fan motor shaft (Figure 4.5). Replace the Main Deck and Mattress Tray. Place the Power Switch to the ON Position and wait for the end of the Self–Test cycle. Within 5 minutes the Low Air Flow Alarm message should appear in place of the Trend Display and the audible alarm should sound. Turn the Power Switch OFF.

Remove the Mattress Tray and Main Deck from the Incubator. Remove the cover from the Heater and Fan Motor well. Remove the heater radiator. Replace the Main Deck and Mattress Tray. Place the Power Switch to the ON Position and wait for the end of the Self–Test cycle. Within 5 minutes the Heater Failed message should appear in place of the Trend Display and the audible alarm should sound. Turn the Power Switch OFF. Replace the heater radiator and restore the Incubator to normal operation before proceeding to the next step.

B. CHECK THE AIR CONTROL MODE OF OPERATION

With all access openings closed, allow the incubator to warm up to the Air Set Temperature of 35 °C; it should take less than one hour. When the Air Temperature Display has stabilized, the Digital Display should remain within 0.5 °C of set temperature for 15 minutes.

C. CHECK THE AIR SET TEMPERATURE ALARM

Open the Access Panel. In approximately 5 minutes the Alarm Indicators should activate, the Low Air Temperature Message should appear in place of the Trend Display and the audible alarm should sound. Close the Access Panel.

D. CHECK THE SKIN MODE OF OPERATION

Connect the Skin Probe to Skin Connector No. 1 (one blue ring) on the Sensor Module. Place the Skin Probe 4 inches above center mattress. Set the Skin Set Temperature to 35 °C. When the temperature stabilizes, open the Access Panel. In approximately 5 minutes, the Alarm Indicators should activate, the Low Skin Temperature Message should appear in place of the Trend Display and the audible alarm should sound.

IMPORTANT: *The Sensor Module is equipped to accept two Skin Probes. To control Incubator Temperature using skin temperature, insert a Skin Probe into Skin Connector No.1.*

When a second skin probe is connected to the Sensor Module while operating in Skin Mode, an alarm will sound and the Message "Remove Skin 2 Probe" will appear. To connect a second skin probe, Air Control Mode must be selected first. The Controller will then display the respective Skin 1 and Skin 2 temperature being monitored by the skin probes.

E. CHECK THE CONNECT SKIN 1 PROBE ALARM

Remove Skin Probe Number 2 from the Sensor Module. Select Skin Mode of Operation. Disconnect the Skin Probe from the Sensor Module. The audible alarm should activate and the Skin Display should go blank. The Message "Connect Skin 1 Probe" should appear. Press the Silence/Reset Key, the audible alarm should go silent for 5 minutes. Reconnect a Skin Probe, the Incubator should return to normal operation.

F. CHECK MAXIMUM AIR TEMPERATURE

Connect a Skin Probe to the Sensor Module and select Skin Control Mode and a temperature of greater than 37 °C. Place the Skin Probe sensor outside the Incubator. Allow the Incubator to heat. If the Skin Temp Alarm sounds, press the Silence/Reset Key. The Incubator should not heat above 39.9 °C as indicated by the Air Temperature Display.

G. THE CONTROLLER OPERATIONAL CHECKOUT IS COMPLETE

2.6.4 OPERATIONAL CHECKOUT – WEIGHING SYSTEM, OXYGEN SYSTEM AND HUMIDITY SYSTEM (ACCESSORIES)

A. OPERATIONAL CHECKOUT – WEIGHING SYSTEM (ACCESSORY)

NOTE: If a pounds/ounces display is desired, refer to Paragraph 2.5 Installation/Set-Up Menu.

1. **SELECT DISPLAY 2** and press the WEIGH Softkey. Press the ZERO Softkey twice in succession. The Weight Display should read zero and the Weight Sample Bar should be searching.

   NOTE: *If necessary, remove any objects from the mattress before pressing the ZERO Softkey.*

2. **PLACE A WEIGHT OF KNOWN VALUE (LESS THAN 7 KG (15 LBS)) ON THE MATTRESS.**

IMPORTANT: *The mattress should be level, i.e., not in the Trendelenburg or Reverse Trendelenburg position.*

3. **THE WEIGHT SHOULD BE DISPLAYED IN KILOGRAMS.** When the Weight Sample Bar stops searching (bar filled), a beep will sound and the weight will be locked into the Weight Display.

4. **PRESS THE HOME KEY** to return to Display 2. Press the WEIGH Softkey. The display should again display the value of the weight on the mattress.

5. **REMOVE THE WEIGHT FROM THE MATTRESS** and press the HOME Softkey.

B. OPERATIONAL CHECKOUT – OXYGEN SYSTEM (ACCESSORY)

1. **PLACE A CALIBRATED OXYGEN ANALYZER** inside the hood at center mattress.

2. **ON DISPLAY 1** press the Oxygen Softkey.

3. Turn on Oxygen Control. Set the oxygen set point to 45%.

4. **WITHIN 5 MINUTES** the oxygen analyzer and the Oxygen Display should read 45 ± 5%.

C. OPERATIONAL CHECKOUT – HUMIDITY SYSTEM (ACCESSORY)

1. **FILL THE RESERVOIR** and place the probe of a calibrated hygrometer inside the hood at center mattress.

2. **ON DISPLAY 1** press the Humidity Softkey. Turn on the Humidity. Set the humidity set point to 50%.

3. **WITHIN 30 TO 60 MINUTES** the hygrometer and the Humidity Display should read 50 ± 5%.

SECTION 3
TECHNICAL INFORMATION

3.1 SPECIFICATIONS

The specifications for the **Isolette® Infant Incubator** are provided in Table 3.1. All specifications are subject to change without notice.

TABLE 3.1: SPECIFICATIONS

POWER REQUIREMENTS (Incubator and Fixed Height Pedestal/Stand)	100V, 120V ± 10%, 50/60 Hz, 600W Maximum. 220V, 240V ± 10%, 50/60 Hz, 650W Maximum.
POWER REQUIREMENTS (Incubator and VHA Pedestal/Stand)	100V,120V, ± 10%, 50/60 Hz, 1100W, Nominal. 220V, 240V ± 10%, 50/60 Hz, 1100W Nominal.
CONVENIENCE OUTLETS	100V ± 10%, 50/60 Hz, 500W Maximum 120V ± 10%, 50/60 Hz, 850W Maximum 240V ± 10%, 50/60 Hz, 1900W Maximum
CHASSIS LEAKAGE CURRENT	300 uA or less 100V and 120V units. 500 uA or less 220V and 240V units.

With respect to IEC 601-1, this equipment is Class I, Type BF. Continuous operation with short time loading (VHA).

TABLE 3.1: SPECIFICATIONS (Continued)

ALARMS

System Alarms

Power Failure ..... Activates if primary power to the Incubator fails or the power cord is accidentally disconnected from the wall receptacle.

Motor Failed ..... Motor malfunction, refer unit to Service.

EEPROM Failed ..... Internal malfunction, refer unit to Service.

Heater Failed ..... Heater malfunction, refer unit to Service.

Controller Failure ..... Internal malfunction, refer unit to Service.

Air Probe Failed ..... Air Probe malfunction, refer unit to Service.

Ambient Temp Too High ..... Activated when set point is less than 3 °C above Room Ambient.

Low Air Flow ..... Activated by lack of air circulation within Incubator.

Sensor Module Failure ..... Activated when Sensor Module malfunctions or is not connected to the Incubator.

Sensor Out of Position ..... Activated when Sensor Module is not in correct position to perform calibration or continue operation.

TABLE 3.1: SPECIFICATIONS (Continued)

Temperature Alarms

Low Air Temperature ..... Activated if displayed Air Temperature is 2.5 °C below set point.

High Air Temperature ..... Activated if displayed Air Temperature is 1.5 °C above set point.

Skin Mode Disabled ..... Skin Control Mode Deactivated*

High Skin Temperature ..... Activated if displayed Skin Temperature is 1.0 °C** above set point.

Low Skin Temperature ..... Activated if displayed Skin Temperature is 1.0 °C** below set point.

Skin Probe Disconnect ..... Activated during Skin Control Mode when Skin Probe is disconnected from Sensor Module.

Connect Skin 1 Probe ..... Activated when Skin Mode is selected and Skin Probe is not connected.

Skin 1 Probe Fail ..... Activated when Skin Probe P1 malfunctions.

Remove Skin 2 Probe ..... Activated when second Skin Probe is connected to Sensor Module when operating in Skin Control Mode.

High Temp Cut Out ..... Activated if **Incubator Temperature*****

120V Incubators only — exceeds 37.5 ± 0.5 °C for set temps < 37 °C in Air Mode.
exceeds 39.5 ± 0.5 °C for set temps >37 °C in Air Mode.
exceeds 39.5 ± 0.5 °C in Skin Mode.

100V, 220V, 240V Incubators — Will alarm at 37.5 ± 0.5 °C for set temps < 37 °C.
39.5 ± 0.5 °C for set temps >37 °C.

Oxygen Alarms

Low Oxygen % ..... Activated if displayed O_2 value is more than 3% below set point.

High Oxygen % ..... Activated if displayed O_2 value is more than 3% above set point.

Oxygen Cal Required ..... Activated if recalibration of O_2 System is required.

Oxygen Cell Different ..... Oxygen Cell Readings Differ > 3%.

*Refer to Paragraph 2.5 to activate Skin Control Mode

**Skin Temperature Alarm Limit may be set to ± 0.5 °C or ± 1.0 °C, refer to Paragraph 2.5

***Refer to Table of Definitions and Symbols

TABLE 3.1: SPECIFICATIONS (Continued)

Humidity Alarms

Water Level Low ..... Activated if water level drops below a predetermined threshold or more time required to reach set point.

Weight Alarms

Scale Disconnected ..... Activated if cable between Scale and Sensor Module is disconnected.

Too Much Weight ..... Activated when the weight on scale is greater than 7 Kg (15 lbs) or greater than 1 kg during zeroing.

Clear Mattress ..... Remove any extraneous objects from Mattress

Silence/Reset

Press to Silence for a Period of 15 minutes	Alarm
	Low Air/Skin Temperature. High Air/Skin Temperature. Water Level Low. Power Failure.

Press to Silence for a Period of 5 minutes	Alarm
	Skin 1 Probe Failure. Skin Probe Disconnect. High Temperature Cutout

Press to Silence for a Period of 4 minutes	Alarm
	Oxygen High %. Oxygen Low %. O_2 Cal Required. Oxygen Cell Different

Press to Reset*	Alarm
	High Temp Cut Out. Sensor Module Failure. Power Fail

*Cancels the alarm if alarm condition no longer exists.

TABLE 3.1: SPECIFICATIONS (Continued)

TEMPERATURE CONTROL RANGES

Air Mode Control ..... 20.0 to 37.0 °C.
37.0 to 39 °C, Temperature Override Mode.

Skin Mode Control ..... 34.0 to 37.0 °C.
37.0 to 38.0 °C, Temperature Override Mode.

Temperature Rise Time* (typical @ 22 °C ambient) ..... <35 minutes.

Temperature Variability* ..... <0.5 °C.

Temperature Overshoot* ..... < 0.5 °C maximum.

Temperature Uniformity* (level mattress) ..... <0.8°C.

Correlation of Indicated Air Temperature to Actual Incubator Temperature*
(after **Incubator Temperature Equilibrium*** is reached) ..... ≤0.8°C.

ENVIRONMENTAL

Carbon Dioxide (CO2) Level within the Hood
..... Less than 0.8% when a mixture of CO2 in air is delivered at 750 ml/min at a point 10 cm above the center of the mattress.

Temperature:

Operating Range ..... +20 °C to + 35 °C Ambient.
Storage Range ..... –30 °C to + 70 °C Ambient.
Operating Range–RH Sensor ..... +20 °C to + 41 °C.
Operating Range–O_2 Sensor ..... +20 °C to + 41 °C.

Humidity:

Operating Range ..... 5% to 99% RH Non–Condensing.
Storage Range ..... 0% to 99% RH Non–Condensing.

Noise Level Within Hood Environment ..... < 47 dBA with 37 dBA or less ambient.

Air Velocity Over Mattress ..... Does not exceed 10 cm/sec.**

HUMIDITY CONTROL

Operating Time Without Refilling ..... >24 hours maximum @ 85% RH.

Reservoir Capacity ..... 1000 ml.

Humidity Control Range ..... 30 to 95% in 1% increments.

Humidity Control Accuracy (10 to 90% @ 20 to 40 °C) ..... ± 5% RH.

Maximum Humidity Level ..... .> 85% RH at Incubator Set Temp of 39.0 °C.

OXYGEN CONTROL

Oxygen Range ..... 18% to 99%.

Oxygen Resolution ..... 1%.

Oxygen Accuracy–100% Calibration ..... ± 3%.

*Refer to Table of Definitions and Symbols
* * Average of 5 points @ 10 cm above mattress (Refer to Table of Definitions and Symbols for measurement points).

TABLE 3.1: SPECIFICATION (Continued)

OXYGEN CONTROL (cont.)

Oxygen Accuracy–21% Calibration ..... ± 5%.
Oxygen Set Range ..... 21% to 65%.
Oxygen Set Resolution ..... 1%.

WEIGHT

Weight Display Range ..... 0 to 7 Kg.
Weight Display Resolution ..... 1 g or 1 oz.
Weight Display Accuracy ..... ± 2 g ± 1/2 Digit up to 2 Kg
± 5 g ± 1/2 Digit over 2 Kg.

PHYSICAL DIMENSIONS

Nominal Dimensions on Fixed Pedestal/Stand

Height from Floor ..... 142 cm (56 ± 0.5").
Depth ..... <59.7 cm (<23.5").
Width without Tilt Knobs ..... <99 cm (<39").
Width with Tilt Knobs ..... <104 cm (<41").
Mattress to Floor ..... 101 cm (39.75 ± 0.5").

Nominal Dimensions on VHA Pedestal/Stand (Depth and Width same as Fixed)

Height from Floor ..... 133.4 to 152.4 cm (52.5 ± 0.5 to 60.0 ± 0.5").
Mattress to Floor ..... 90 to 110 cm (35.5 ± 0.5 to 43.5 ± 0.5").

Incubator Weight with Fixed Height Pedestal/Stand* ..... 88 Kg (195 lbs).
Incubator Weight with VHA Pedestal/Stand* ..... 90 Kg (198 lbs).
IV Pole Max. Load ..... 5 Kg (11 lbs).
Monitor Shelf Max. Load ..... 11 Kg (25 lbs).

Mattress Tray Dimensions

Width ..... 78.7 cm (31.0").
Depth ..... 40.6 cm (16").

Mattress Tilt

Trendelenburg/Reverse Trendelenburg ..... Continuously Variable to 12°.

*Without Options

TABLE 3.1: SPECIFICATIONS (Continued)

FACTORY DEFAULT SETTINGS

Temperature Control Mode	Air Mode.
Air Set Temperature	35.0 °C.
Skin Set Temperature	36.5 °C.
Humidity Control Mode	OFF.
Humidity Set Value	50% RH.
Oxygen Control Mode	OFF.
Oxygen Control Set Value	21%.
Temperature Units	°C.
Weight Units	Kgs.
Trend	Air, 2 Hours
Language	English

NOTE: *Open Access Doors or Panel or the use of infant seats, supplies or other equipment within the Incubator, which can alter the air flow pattern, may affect temperature uniformity, temperature variability, the correlation of the Incubator temperature reading to center mattress temperature and skin temperature.*

3.2 THEORY OF OPERATION

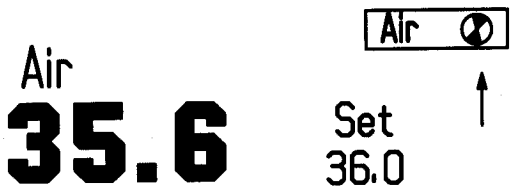
3.2.1 GENERAL

This section contains the functional description and detailed theory of operation of the equipment.

3.2.2 OVERALL FUNCTIONAL DESCRIPTION

The **Isolette® Infant Incubator** Controller provides displays of Air Temperature and Skin Temperature on a back lit LCD or Electro–Luminescent Display. Optional displays of Humidity and Oxygen Concentration levels within the hood environment and Infant Weight are available. In addition, Trend Displays of 2, 4, 8, 12 and 24 hours of all parameters (except weight, which is presented in days) are user selectable.

To indicate which parameter (Air or Skin) is controlling, the Set Temperature of the controlling parameter remains on adjacent to the actual displayed temperature. In addition, the rotating wheel in the AIR or SKIN softkey designator rotates.



The control of temperature, humidity, and oxygen concentration is achieved by means of the forced air circulation system as shown in Figure 3.1. A controlled amount of room air (approximately 7 lpm) is drawn through the air intake filter by means of the motor–driven impeller located in the Shell.

In addition to drawing fresh, filtered air into the Incubator, the impeller provides for the internal re–circulation at a much greater flow than that of the fresh gas inflow. The total flow of fresh and re–circulated air is directed past the air flow sensor and around the heater. The air enters the infant compartment up through the slots at the front and rear of the main deck, as shown in Figure 3.1. It then passes between the Front and Rear Inner Walls. The air circulates past the Sensor Module which contains the temperature sensing probe which encapsulates the air temperature control thermistor and a high air temperature alarm thermistor. After circulating within the infant compartment, the air is then re–circulated down through a slot in the right end of the main deck, and back to the impeller. When the Access Panel of the Hood is open, the air continues to flow upward past the opening, creating a warm air curtain which minimizes the drop in air temperature in the Incubator.

Temperature is regulated using either Incubator Air or Skin temperature as the controlling parameter; the desired mode is selected by the front panel keys.

In either mode of operation, the heater output is proportional to the amount of heat required to maintain the desired temperature. Each mode of operation (including the optional Oxygen, Weight and Humidity functions) is described below.

AIR TEMPERATURE MODE

In this mode of operation, the air temperature can be maintained from 20 to 37 °C (37 to 39 °C in Temperature Override Mode), as selected by the **Air Set Temperature** Up/Down Arrow keys on the front panel.The Incubator air temperature is monitored by a probe located in the Sensor Module and compared with the Air Set Temperature setting. The information from this probe is supplied to the heater control circuitry which regulates the heater output to maintain the Air Temperature setting. The actual air temperature is displayed on the **Air Temperature** Display. A second sensor within the air temperature probe serves as a backup to limit the maximum Incubator temperature. In the event that the high temperature limit is activated, the heater is shut off.

In the Air Temperature Mode of operation, the infant's temperature will be a function of the air temperature and the infant's ability to establish and maintain its own temperature. A small infant, or one with underdeveloped homeostatic control, may not be able to maintain a stable temperature at the desired level.

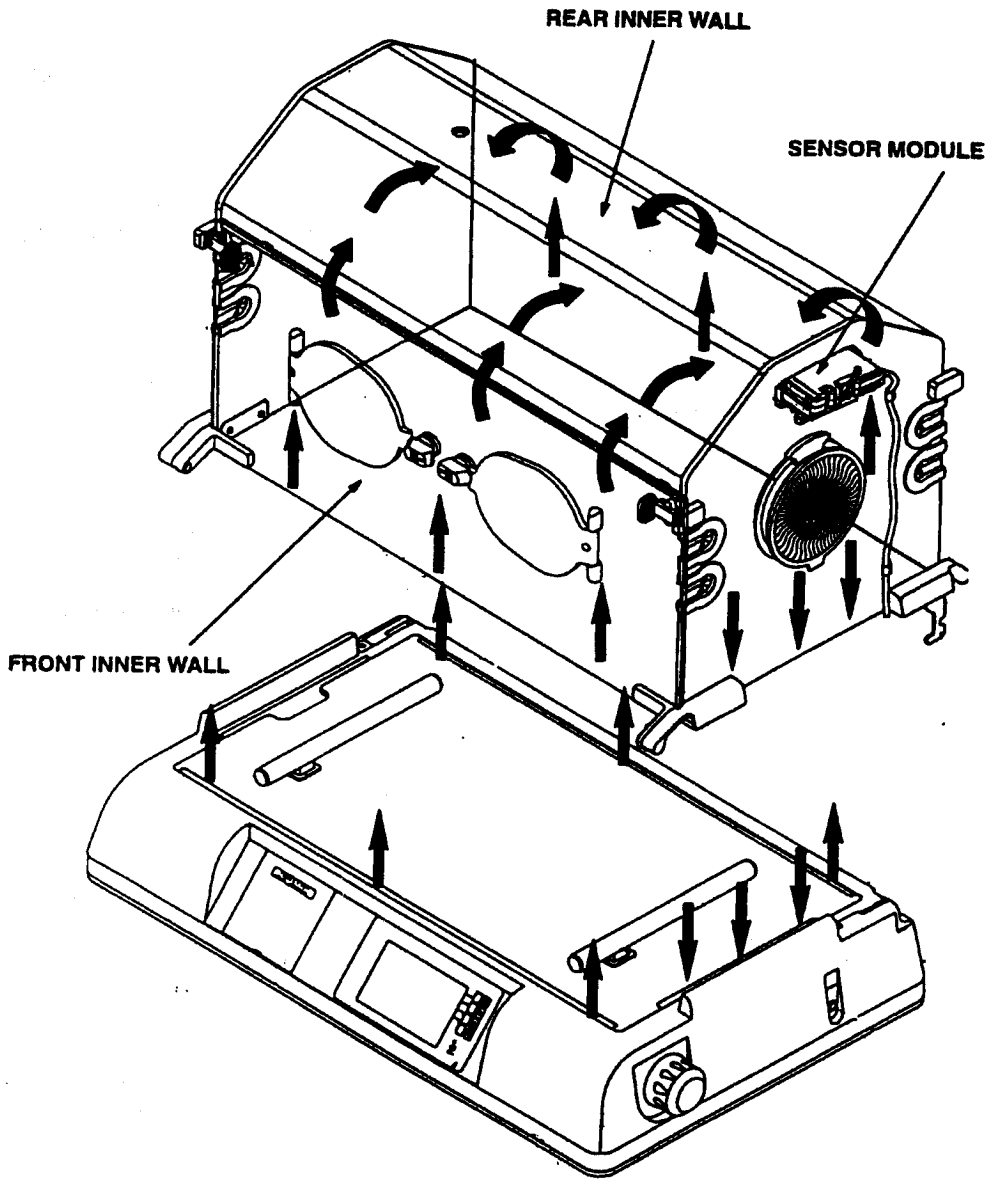


FIGURE 3.1: AIR/O_2 CIRCULATION SYSTEM

SKIN TEMPERATURE MODE

In this mode of operation, the infant's temperature can be selected from 34 to 37 °C (37 to 38 °C in Temperature Override Mode) by the **Skin Set Temperature** Up/Down Arrow keys on the front panel. A temperature sensing probe is attached directly to the infant's skin; the information from the probe is supplied to the heater control circuitry which proportions the heater output to maintain the Skin Set Temperature.

The air temperature is still displayed in the **Skin Mode**, for information only. If Air Temperature Mode is selected while the Skin Probe remains connected, the **Skin Temperature** Display will continue to display actual Skin temperature, but will not control it.

IMPORTANT: *The Sensor Module is equipped to accept two Skin Probes. To control Incubator Temperature using skin temperature, insert a Skin Probe into Skin Connector No.1.*

When a second Skin Probe is connected to the Sensor Module when operating in Skin Mode, an alarm will sound and the Message "Remove Skin 2 Probe" will appear. To connect a second Skin Probe, Air Control Mode must be selected first. The Controller will then display the respective Skin 1 and Skin 2 temperatures being monitored by the Skin Probes.

If Probe 1 is disconnected from its receptacle during **Skin Mode** of operation, the **Skin Temperature** Display blanks and an audible alarm is activated and the heater is turned off.

OXYGEN CONTROL

The Oxygen Concentration Level within the Incubator hood environment is controlled by adjusting the flow of oxygen into the hood using an Oxygen Sensor assembly mounted inside the Sensor Module.

Flow into the Incubator is regulated by a valve which periodically interrupts the flow of Oxygen into the Incubator.

The Sensor Module houses two independent O_2 fuel cells which are used to monitor and control the oxygen concentration levels inside the Incubator.

If the Sensor Module is outside of the hood environment during Oxygen Control Mode, audible and visual alarms are enabled and the flow of oxygen is interrupted.

In Oxygen Control Mode, the user may set the oxygen level control point from 21% to 65%. The high and low alarm limits are automatically set to ± 3% from the control point. In the event that the oxygen concentration level rises above or falls below the selected set point limits, an audible and visual alarm occurs.

HUMIDITY CONTROL MODE

The built–in Humidifier provides humidification of the Incubator from 30 to 95% RH in 1% increments. The Humidifier Reservoir permits visual inspection of the water level.

If the water level in the chamber depletes, an audible and visual alarm occurs (Water Level Low), indicating a need to replenish the water supply.

WEIGHING MODE

The actual weighing function is performed by two load cells contained in a platform under the mattress. These cells provide a voltage which is proportional to the load on it. The voltage is processed by the Controller which in turn displays it in either kilograms or pounds/ounces on the Weight Display.

The weighing routine may be initiated by placing the infant on the mattress, or in the event the infant was already on the mattress, the infant must be lifted off the mattress; when the system zeros, return the infant to the mattress to obtain the weight.

The Weigh key allows for repeated reweighing of the infant after the weighing routine has been initiated as described above.

3.2.3 ALARMS

HIGH AND LOW AIR AND SKIN TEMPERATURE ALARMS

The High and Low Air or Skin Temperature Alarms are actuated if the skin or air temperature fluctuates from the set temperature as follows:

Skin Temperature	+1.0 °C
	–1.0 °C
Air Temperature	+1.5 °C
	–2.5 °C

NOTE: *The Skin Temperature limits may also be set to ± 0.5 °C. Refer to Paragraph 2.5 Installation/Set–Up Menu.*

A temperature below the Air or Skin Set Temperature is indicated by Low Air Temperature or Low Skin Temperature in the Message Center, an audible alarm, flashing Indicators and a low temperature reading. A temperature above the Air or Skin Set Temperature is indicated by High Air Temperature or High Skin Temperature in the Message Center, an audible tone, flashing Indicators and a high temperature reading.

The High and Low Air or Skin Temperature Alarms are self–resetting; that is, if the alarm condition is corrected, the audible alarm is automatically silenced and the visual alarm indicators are turned off. The audible portion of the High and Low Air or Skin Temperature Alarms can be silenced by pressing the **Silence/Reset** key; the activation of other audible and visual alarms will not be affected by use of the 15–minute audible alarm silence. When the alarm is silenced, the alarm indicators will remain on until the alarm condition is corrected. If the alarm condition is not corrected within 15 minutes, the audible alarm will be reactivated.

In addition, if it is desired to change the Air or Skin Set Temperature (either high or low) after the Incubator is in operation, the High Temperature and Low Temperature alarms are automatically silenced for a specific amount of time after the operator raises or lowers the Air or Skin Set Temperature from the current operating temperature.

As a general rule, the greater the change from the current Incubator temperature, the longer the alarm will remain silent. If the Incubator fails to reach the new set temperature after the specified time, the alarm will sound.

Alternately, before changing the current Air Set Temperature, the operator may press the **Silence/Reset** Key to place the unit in the Procedural Silence Mode of operation. In the Procedural Silence Mode, the Low Temperature alarm is silenced for up to 15 minutes. This Procedural Silence will be terminated if a High Temperature, Air Flow or Probe Alarm occurs.

ALARM MESSAGES

The alarm and system prompt messages that will replace the Trend Display or the Oxygen and Humidity Displays during an alarm condition or procedure are presented in Table 3.1.

In the event that two or more alarms occur simultaneously, or one after the other, the messages that describe the alarms will be presented in sequence. A total of 5 messages can be posted.

3.2.4 TREND DISPLAYS

Four standard parameters are presented on Trend Displays:

Air Temperature

Skin Temperature 1

Skin Temperature 2

Heater Power

Additional trend displays are also available when the unit is equipped with any of the following options:

Oxygen

Weight

Humidity

The trend time is user selectable in intervals of 2, 4, 8, 12, 24 hours for all parameters except weight which provides a trend of seven days.

3.2.5 INTERFACE CONNECTIONS

A serial interface port is provided. This port is configured as a Data Terminal Device and provides an RS232 output.
The following parameters are available:

- Air and Skin Set Point Temperatures
- Current Air and Skin Temperatures
- Any Alarm Messages that Occur
- Oxygen Set Point
- Oxygen Level
- Humidity Set Point
- Humidity Level
- Infant Weight

TABLE 3.2: ALARM MESSAGES

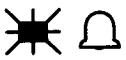
ALARM MESSAGE	DESCRIPTION
SYSTEM RELATED ALARMS	
Power Failure Indicator	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator has lost external power. This alarm may be silenced for 15 minutes by pressing the Silence/Reset Key. Reconnect power cord.
Alarm Indicator 	A flashing alarm Indicator is displayed along with an audible alarm to indicate that the Incubator has experienced an alarm condition.
Motor Failed	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator fan motor has failed. The Incubator should be turned off, removed from service and referred to qualified service personnel.
EEPROM Failed	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator has experienced an internal malfunction. The Incubator should be turned off, removed from service and referred to qualified service personnel.
Heater Failed	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator heater has failed. The Incubator should be turned off, removed from service and referred to qualified service personnel.
Controller Failure	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator Controller has experienced an internal malfunction. The Incubator should be turned off, removed from service and referred to qualified service personnel.
Air Probe Failed	A flashing alarm Indicator is displayed along with a continuous audible alarm to indicate that the Incubator air probe has failed. The Incubator should be turned off, removed from service and referred to qualified service personnel.
Sensor Module Failure	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the Sensor Module has experienced an internal failure. The Incubator should be turned off, removed from service and referred to qualified service personnel.
Sensor Out of Position	Informs the user that the Sensor Module is not in the correct position to perform calibration or continue operation.

TABLE 3.2: ALARM MESSAGES (Cont.)

ALARM MESSAGE	DESCRIPTION
SYSTEM RELATED ALARMS (cont.)	
Ambient Temp Too High	This alarm is activated if the set point is less than 3 °C above Room Ambient.
High Temp Cut Out	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that Incubator air temperature has reached 39.5 ± 0.5 °C. USA and Canada Incubators only. All other Incubators will alarm at 37.5 ± 0.5 °C for set temps < 37 °C and 39.5 ± 0.5 °C for set temps >37 °C.
Low Air Flow	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that there is a lack of air circulation within the hood environment.
INCUBATOR AIR TEMPERATURE RELATED ALARMS	
Low Air Temperature	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the Incubator air temperature is 2.5 °C below the Air Set Temperature. This alarm may be silenced for 15 minutes by pressing the Silence/Reset Key.
High Air Temperature	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the Incubator air temperature is 1.5 °C above the Air Set Temperature. Additionally, the heater is turned off. This alarm may be silenced for 15 minutes by pressing the Silence/Reset Key.
SKIN TEMPERATURE RELATED ALARMS	
Skin Mode Disabled	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the Skin Control Mode of Operation has been disabled. Refer to paragraph 2.8.5 to activate the Skin Control Mode of Operation.
Low Skin Temperature	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the baby skin temperature being monitored by Skin Temperature Probe 1 is 1 (or 0.5) °C below the Skin Set Temperature. This alarm may be silenced for 15 minutes by pressing the Silence/Reset Key.
High Skin Temperature	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the baby skin temperature being monitored by Skin Temperature Probe 1 is 1 (or 0.5) °C above the Skin Set Temperature. This alarm may be silenced for 15 minutes by pressing the Silence/Reset Key.

TABLE 3.2: ALARM MESSAGES (Cont.)

ALARM MESSAGE	DESCRIPTION
SKIN TEMPERATURE RELATED ALARMS (cont.)	
Remove Skin 2 Probe	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that a second Skin Probe is connected to the Sensor Module when operating in Skin Mode. To connect a second Skin Probe, Air Control Mode must be selected first. This alarm can be silenced only by removing the Skin Probe. This message will also be displayed along with an audible alarm and flashing alarm Indicators to indicate that a second Skin Probe is connected to the Sensor Module when operating in Air Mode and an attempt has been made to enter Skin Mode. To enter Skin Mode, the operator must remove Skin Probe 2 and press the Silence/Reset Key.
Skin 1 Probe Fail	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that Skin Temperature Probe 1 has malfunctioned. This alarm may be silenced for 5 minutes by pressing the Silence/Reset Key.
Skin Probe Disconnect	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that Skin Temperature Probe 1 has been disconnected from the Sensor Module while in Skin Mode of operation.
Connect Skin 1 Probe	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that Skin Temperature Probe 1 has been disconnected from the Sensor Module while in Skin Mode of Operation.
Skin Mode Disabled	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that Skin Mode has been disabled. Refer to para 2.5 to enable the Skin Mode.

TABLE 3.2: ALARM MESSAGES (Cont.)

ALARM MESSAGE	DESCRIPTION
OXYGEN RELATED ALARMS	
Low Oxygen %	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the oxygen concentration within the hood environment has fallen below the oxygen set point. This alarm may be silenced for 4 minutes by pressing the Silence/Reset Key.
High Oxygen %	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the oxygen concentration within the hood environment has risen above the oxygen set point. This alarm may be silenced for 4 minutes by pressing the Silence/Reset Key.
Cal Required	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the oxygen control system requires calibration. This alarm may be silenced for 5 minutes by pressing the Silence/Reset Key.
Oxygen Cell Different	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the oxygen cell readings differ by greater than 3%. Refer to qualified service personnel. ***Note:*** *This condition can often be fixed by performing a calibration.*
HUMIDITY RELATED ALARMS	
Water Level Low	This message is displayed along with an audible alarm and flashing alarm Indicator to indicate that the humidity tray is empty. This alarm may be silenced for 5 minutes by pressing the Silence/Reset Key. Refill the reservoir

TABLE 3.2: ALARM MESSAGES (Cont.)

ALARM MESSAGE	DESCRIPTION
WEIGHING SCALE RELATED ALARMS	
Too Much Weight	This message is displayed along with an audible alarm and flashing alarm Indicators to indicate that the weight on the mattress is in excess of 7 Kg (15 lbs) or when zeroing, a weight in excess of 1 Kg is on the mattress. This alarm may be silenced for 5 minutes by pressing the Silence/Reset Key. Remove excess weight.
SYSTEM PROMPTS	
PROMPT MESSAGE	**DESCRIPTION**
Scale Disconnect	This message is displayed to indicate that the cable between the weighing platform and the Sensor Module has been disconnected.
Clear Mattress	Remove any extraneous objects from the mattress that could interfere with system zeroing.
Oxygen Cal Required	Informs the user that the Oxygen Control System requires calibration.
21% Cal	Indicates that the Oxygen Control System is performing the 21% Calibration Procedure.
100% Cal	Indicates that the Oxygen Control System is performing the 100% Calibration Procedure.
Cal Pass	Indicates that the Oxygen Control System has been successfully calibrated.
Cal Fail	Indicates that the Oxygen Control System has failed to calibrate. Repeat the Calibration Procedure. If the system fails to calibrate a second time, refer to qualified service personnel.
Procedural Silence	Indicates that the 5 minute procedural silence is active. During this time Low Skin and Air Temperature Alarms will be automatically silenced for 15 minutes. The Low Oxygen % Alarm will be automatically silenced for 4 minutes.
Slide Out Sensor	Informs the user to withdraw the Sensor Module from the Hood.
Slide In Sensor	Informs the user to return the Sensor Module inside the Hood.
Not Installed	Informs the user that the Humidity and/or Oxygen Systems are not activated and/or installed. Refer to Section 2.

3.3 DETAILED CIRCUIT DESCRIPTION

3.3.1 SENSOR MODULE

The Sensor Module Board provides the interface from the patient and incubator parameters that the Infant Incubator must support. The module reads and processes the following parameters: temperature, Oxygen, humidity and weight information collected from external sensors and cables. This information is periodically updated and will be transmitted to the main controller upon request.

The Sensor Module Board does **not** require manual calibration. Calibration is performed automatically and periodically during normal operation. To provide safe monitoring and control, both the temperature information and Oxygen information have redundant circuitry to prevent single fault failures.

All signals are transmitted through serial data communication.

The Sensor Module Board is connected to a Sensor Board which has some of the parameters required for the system (air temperature, humidity and fan operation).

Power Supply (Sheet 1 of Figure 7.4)

Power to the Sensor Module Board is provided through connector J4, providing ±12V for use in this system. Voltages are regulated by U21, U19 and U15, providing +5V, digital +5V and analog -5V, respectively. U20 provides a precision +5V source to be used in analog signal conversions.

Sensor Position Detection (Sheet 1 of Figure 7.4)

Hall Effect Sensors are used to sense magnets in the slide mechanism. The sensors U9 and U2 are used to determine the calibration position. Sensors U16 and U22 are used to determine the hood position. The output is normally *high*. These devices provide a *low* output if a significant south pole magnetic field is applied to their surface.

Remote Light Alarm Indicator (Sheet 1 of Figure 7.4)

DS1 provides an alarm indication with a high field of view and is illuminated by a positive signal (RMLITE) at the gate of transistor Q3.

Scale Interface (Sheet 1 of Figure 7.4)

Connector J3 provides the interface and power for the Scale Module. The Scale Module supports serial data communication. The signal SCCLK is used for scale communication only and is normally high when the Scale is disconnected. The signal CDATA is bidirectional and is normally in the low state when the Scale is not connected.

Fan Control/Feedback Circuit (Sheet 1 of Figure 7.4)

To drive the DC fan on the sensor board, Q1 is pulsed on its gate by signal *FANON* at a 50% duty cycle at approximately 48 Hz to maintain proper speed and increasing fan life. Every 4 seconds the microcontroller asserts *FANON* for 42 msec, and the fan pulse detection begins.

The pulse detection is handled by U1A, which through resistors R3 and R7 sample the current spikes from the fan produced across R1. The amplifier operates as a differentiator, providing high gain for the current spikes. This signal is then rectified and filtered by D1 and C16 and then fed to the A/D converter as signal *FANPUL*. This effectively provides a semi-dc level as a function of the fan rotation.

DuoLite Interface (Sheet 1 of Figure 7.4)

The Sensor Module interfaces with the DuoLite Phototherapy Unit via J1. The phototherapy signal drives the optocoupler (used for isolation) emitter for U18 with either a constant *High* indicating white light selected or a 1Hz, 50% duty cycle signal indicating that the blue light is selected. The detector routes this signal (ULDATAS) to the microcontroller.

Temperature Measurement (Sheet 3 of Figure 7.4)

The temperature data acquisition circuit starts with analog multiplexer U6 and U5, each allowing an 8 to 1 signal switching. The multiplexer channel selection is accomplished from the microcontroller by the signals *MSEL0*, *MSEL1* and *MSEL2*. Each multiplexer output can be inhibited by either the signal *TM1SEL* or TM2SEL, depending on the multiplexer (only one multiplexer is active at a time). With each multiplexer output into the amplification under control, this data acquisition system can then be viewed as 16 to 1 analog temperature selector. The microcontroller selects a new temperature channel every 21 msec.

Resistor R14 provides the constant voltage drive required for each thermistor as it gets selected from the appropriate multiplexer. This voltage is amplified by a factor of 2.1083, then sent to the A/D converter as signal *TCOM*.

To provide automatic calibration of the circuit (and eliminate temperature and aging drifts), precise calibration values are introduced into each multiplexer. These values are provided by R44 and R45, which are read through the multiplexers and are used in software processing to eliminate the gain and offset errors of each multiplexer/amplifier combination. These values equate to 49.37 °C and 22.62 °C, which allows for precise circuit calibration.

Resistor R43 is an additional check to the circuit. It provides a resistance simulating 36.085 °C.

The Sensor Module supports three air temperature sensors on the Sensor Board: signals AIRTE, AIRTC and AIRTM. These signals are interfaces via J2–6 to J2–8. These thermistors are then routed to temperature multiplexer U5 and U6, which provide analog signal processing into the A/D converter.

The skin temperature probes contain dual thermistors. The Sensor Module can support two probes which can be plugged into connectors J6 and J7. The two thermistors are connected to SKNTXM and SKNTXC (X is either 1 or 2), with a common connector at AGND. Both probes have high frequency filtering by inductor networks LN1 and LN2. In addition, each skin probe has a resistor which is inputted to the multiplexers. These signals (SKNT1D and SKNT2D) are used by the microcontroller to determine if the probes are installed.

Humidity Measurement (Sheet 4 of Figure 7.4)

Humidity measurement originates with the Humidity Sensor on the Sensor Board, connected to J2–5 and J2–14 (AGND and HS2, respectively). The sensor is a capacitive type, which changes capacitance as a function of humidity (the net range of capacitances is from approximately 160 to 200 pF). The Sensor is connected to amplifier U7A/U8A, which is set up as a multi–vibrator. The sensor capacitance is allowed to charge up through R20 and R21 up to a threshold voltage established by R30 and R26. When the capacitor voltage reaches the threshold, capacitor U7A/U8A goes *High* (to 2.5V as controlled by R19 and R28) which turns *On* Q2. This then discharges the Humidity Sensor through R20, until it reaches the lower threshold established by R24, R26 and R30. The capacitor voltage goes from approximately 0.2 V to 0.7 V. At this point the comparators output goes low, releasing the drive to Q2 and allowing the humidity to start charging again. This effectively produces a frequency output as a function of capacitance, i.e., humidity.

The output signal, which is only a 2.5 Vpeak, is then inputted into U7B/U8B to condition the signal 5 V signal. Hysteresis is provided through the use of R23, R29 and R32 to insure stable frequency switching. The output signal JUMPUL is then sent to the microcontroller for processing. A typical frequency would be around 37 KHz.

3.3.2 CONTROLLER

General

The Isolette® Controller consists of three Printed Circuit Boards (CPS): The Main Board, the Power Supply Board and the Display Board. All user input is made from key switches located on the Display Board.

Main Board

General

The Main Board for the Isolette® Controller receives temperature, humidity, oxygen and weight data for the Sensor Module interface. The Controller uses the temperature, humidity and oxygen data as feedback to control the environment inside the Isolette hood.

Microprocessor

The microprocessor is the heart of the Main Board. The microprocessor is an 8-bit processor which communicates with several peripherals to monitor and control the incubator. The peripherals include: Hood Control, Motor Control, Audio, Power Fail, Status, Sensor Module Interface and RS-232 Interface. Refer to Figure 3.2 for the Microprocessor Block Diagram.

The address and data bus are extended to the Display Board to control the video.

Memory, Data Storage

The microprocessor supports 8KX8 SRAM for data storage.

Memory, Program Store

The microprocessor supports 64KX8 EPROM for program store

Address Bus and Address Decode

The Microprocessor addresses memory and the peripherals via the 16-bit address bus: A0-A15. The memory is addressed directly from the address bus. The peripherals are addressed by decoding A2-A6 into 8 chip select lines: SEL0-7. The select lines are then used to latch data to and from the peripherals.

Data Bus

The Microprocessor transfers data to/from memory and the peripherals via the 8-bit data bus: D0-D7.

Peripheral Output

The peripherals are controlled by addressing the appropriate select line while placing data on the data bus. The select line will latch the data into a transparent latch. The outputs from the latch are control lines to the peripherals. The state or level of the control lines will change (i.e., set or reset) as the data to the latch are changed.

Peripheral Input

The select lines will also be used to read status from a peripheral via octal buffers. The peripherals will set or reset status lines to the octal buffers. Throughout the program execution, the microprocessor will read the octal buffers (Select Lines) and check the status by reading the data bus.

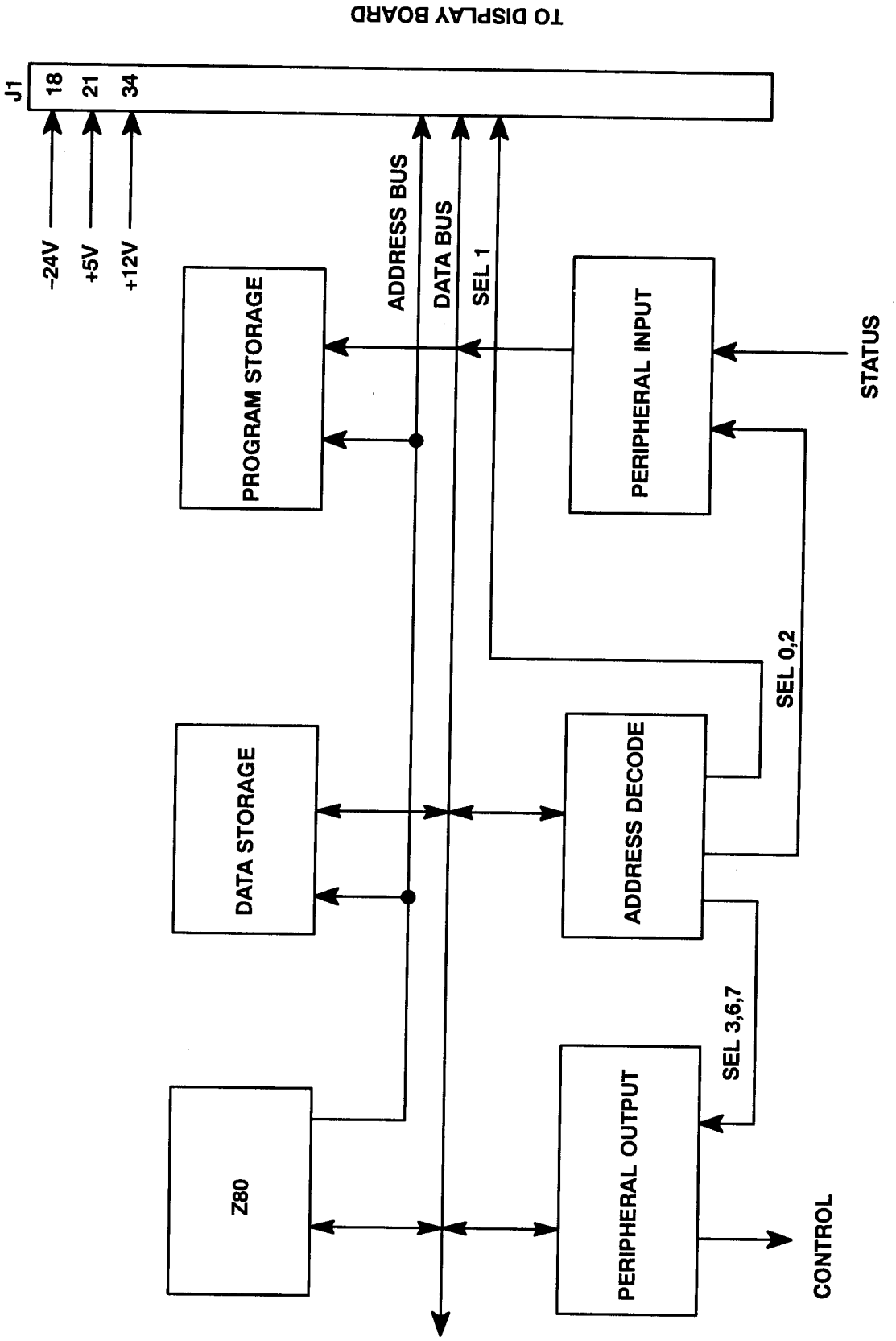


FIGURE 3.2 MICROPROCESSOR FUNCTIONAL BLOCK DIAGRAM

Isolated Area (Figure 3.3)

The Main Board contains an isolated area on the PCB which separates the AC voltage and high DC voltages from the normal operating DC voltages (+5, ±12, ±24VDC) and processor electronics. The isolation barrier also protects the controller inputs from misconnection. Refer to Figure 1.2 for the isolated area block diagram.

Heater Control

The hood control circuits include the heater control and humidity heater control which apply (i.e., latch) AC power to the heater stick or to the humidity heater stick. The duty cycle that the AC is applied is under control by a software algorithm executing in the microprocessor.

The microprocessor also controls the normally open safety relay. When the controller is first initialized, the software will close the relay. Because the relay is normally open, any loss of software control will result in opening the relay, thus removing AC power from the heater. In the event that the hood temperature continues to increase although the software is cutting back on the heater control (i.e., heater runaway), the software will open the safety relay.

Motor Control

The Motor Control circuit is based on the Sprague UDN2936W which drives are based upon an analog input. The analog input to the motor control chip is integrated from a Pulse Width Modulated (PWM) signal from the microprocessor. The hall effect inputs from the DC motor are monitored by the Motor Control chip and provides feedback to the microprocessor for motor failure.

Status Interface

The status circuit provides optically isolated inputs for the following discrete signal inputs: Door Open switches, Air Flow Probe and Heater Thermocouple. The Door Open Switches are read directly into the microprocessor via the octal buffer.

The Heater Thermostat input is read via a comparator that triggers at 50mV.

The Air Flow Probe has two inputs: the long probe and the short probe. The Air Flow Probe inputs are read via comparator which triggers when the long probe reference voltage goes above the short probe reference voltage.

Oxygen Control

The microprocessor applies 12VDC to the oxygen control solenoid. The microprocessor controls the return path for the oxygen control solenoid. The duty cycle is then controlled by a software algorithm executing in the microprocessor.

Change 1

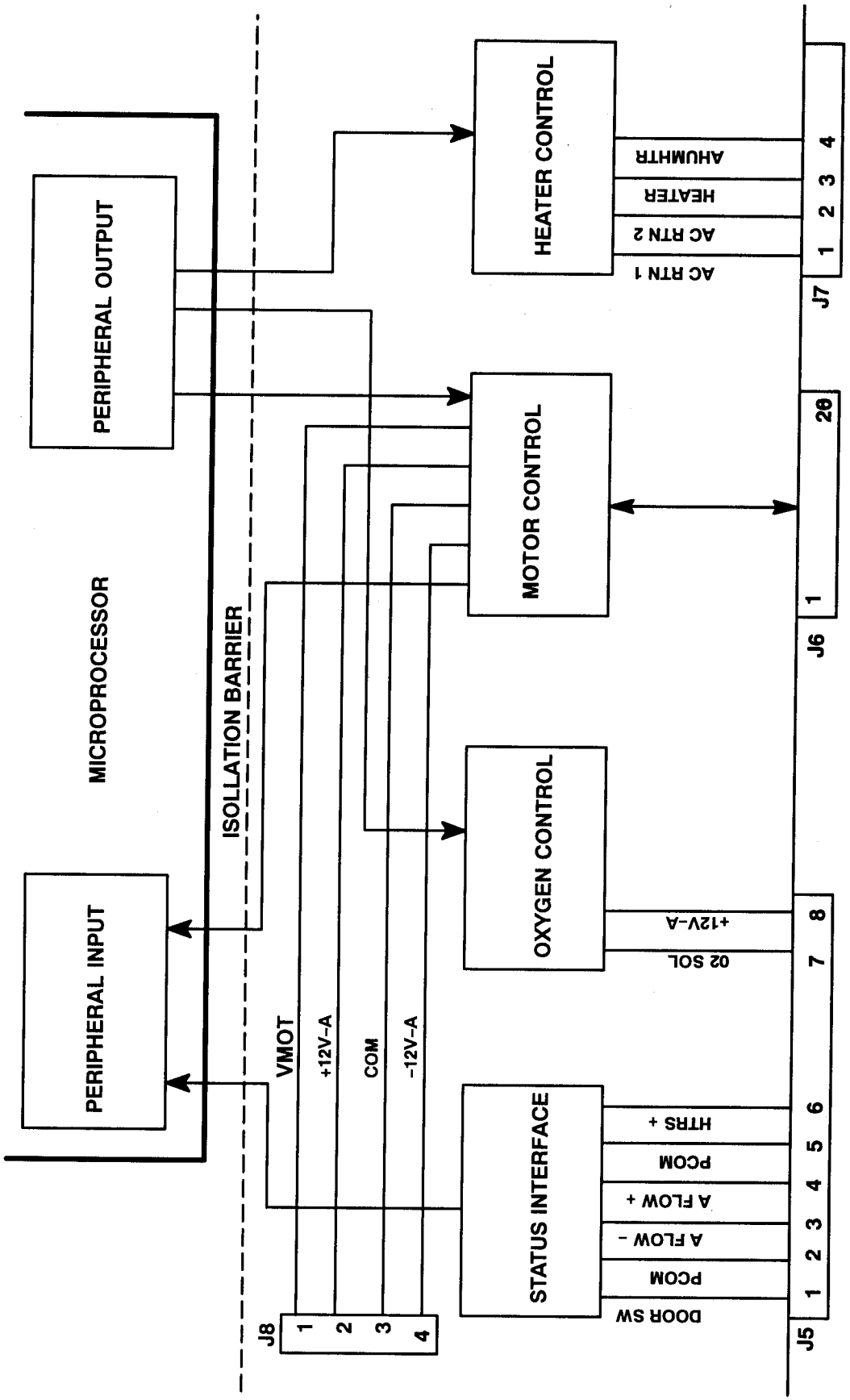


FIGURE 3.3 MICROPROCESSOR ISOLATED AREA FUNCTIONAL BLOCK DIAGAM

Non-Isolated Electronics (Figure 3.4)
Refer to Figure 3.4 for the non-isolated block diagram.

Audio
The audio circuit consists of a LM555 timer which pulses at a 1 Hz duty cycle. The alarm tone frequency also is controlled by the LM555. Three alarm volume levels are decoded from the microprocessor to increase the gain of the audio amplifier.

Power Fail
A PIC processor chip monitors the controller power and enunciates an audible tone through a piezo in the event of an AC power fail. The PIC also enunciates a tone at power up as part of the power-up self test.

Sensor Module Interface

- The Main Board supports communication to/from the Sensor Module. Data are transmitted from the microprocessor via a transparent latch to the Sensor Module via line drivers (PN2222 transistor).
- Data from the sensor module are read directly into the microprocessor via an octal buffer.

RS-232 Interface

- The Main Board supports communication from the controller via an RS-232 port. Data are transmitted from the microprocessor from a transparent latch to the Sensor Module via an optical isolator and line drivers (PN2222 transistor).
- Data from the sensor module are read directly into the microprocessor via a line receiver (PN2222 transistor), an optical isolator into an octal buffer.

Change 1

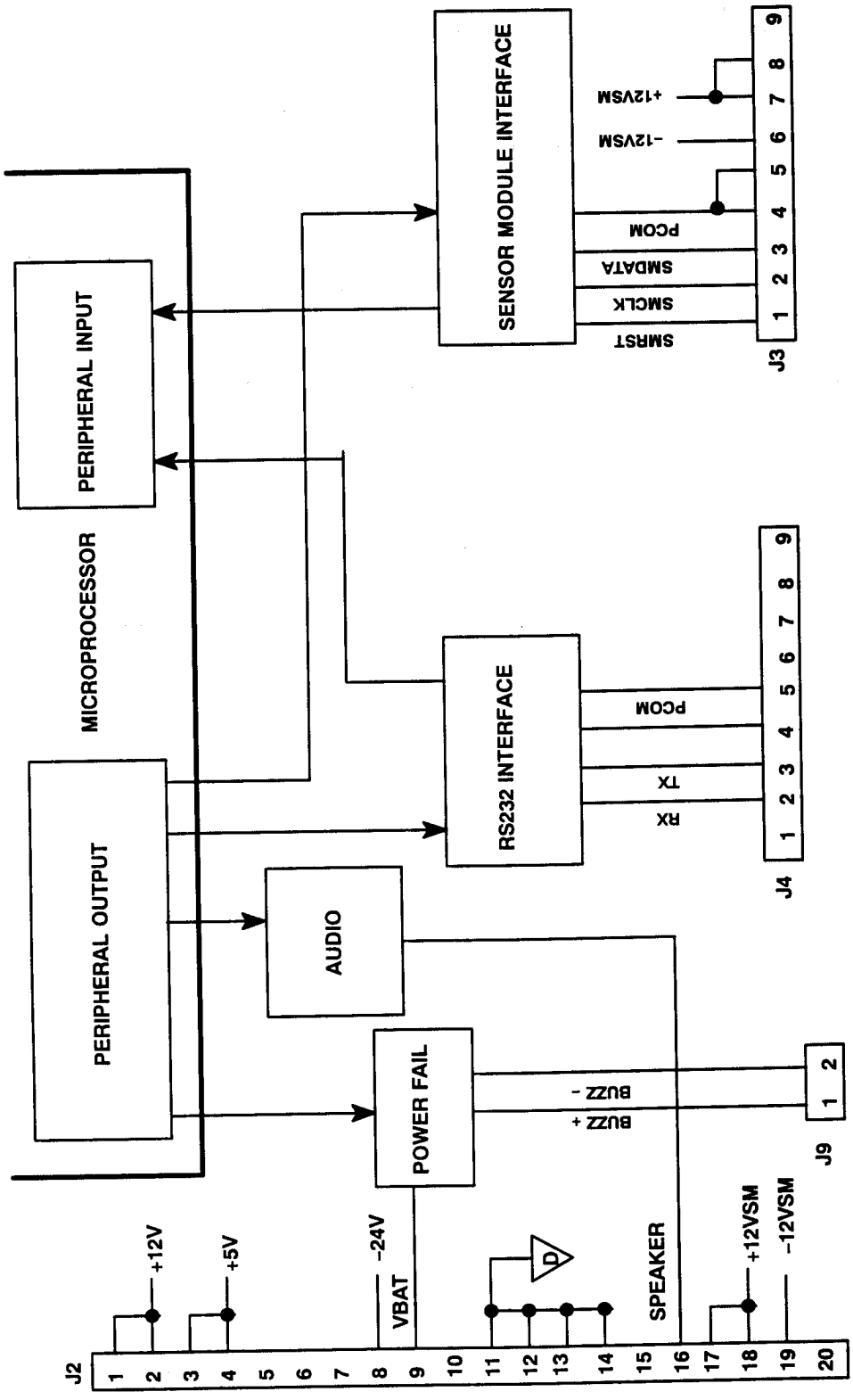


FIGURE 3.4 MICROPROCESSOR NON-ISOLATED AREA FUNCTIONAL BLOCK

Power Supply Board

AC Input and Transformer

Refer to Figure 3.5 for the AC Input Block Diagram.

AC Input/AC Switch Input

AC Power is connected to the terminal block located on the Power Supply PCB. The AC Power is then protected by two fuses and routed back to the terminal block for connection to the AC Power Switch inputs. AC Power is also tapped before the AC Power Switch to create an AC UNPLUGGED signal (Power Fail).

AC Switch Output/Transformer

The AC Power Switch outputs are connected to the terminal block on the Power Supply PCB and AC Power is routed to the transformer mounted to the Power Supply PCB. The transformer taps can be changed using jumpers A, B, C, D and E. Table 1 defines the tap settings.

	100VAC	120VAC	220VAC
Tap Settings	B and D	A and E	C and E

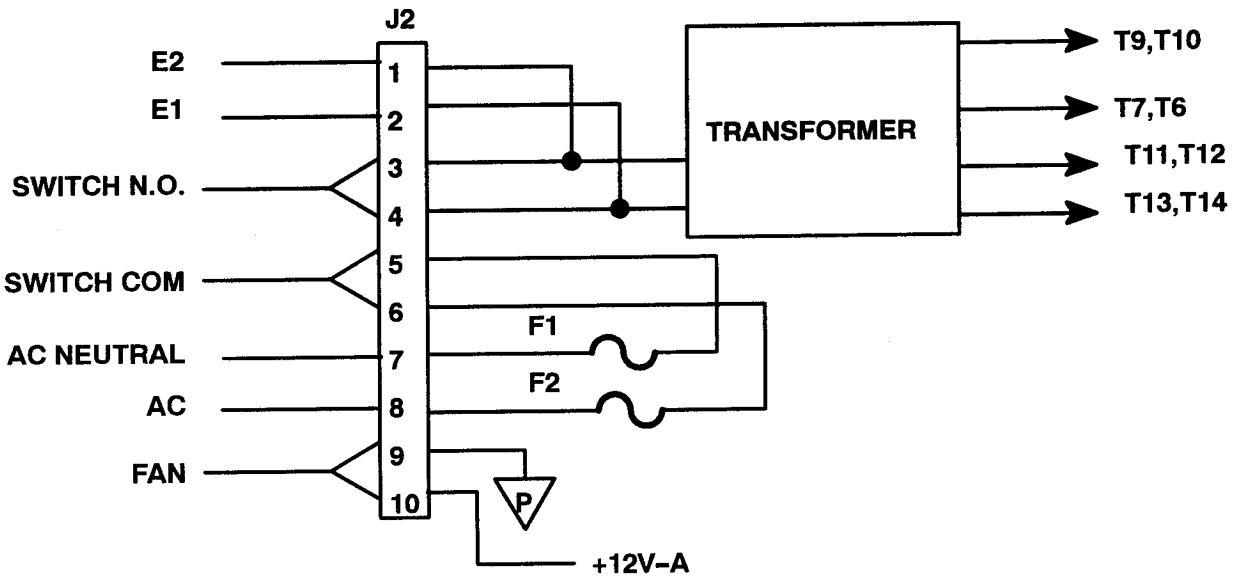


FIGURE 3.5 AC INPUT AND TRANSFORMER FUNCTIONAL BLOCK DIAGRAM

Change 1

Main Board DC Supplies

Refer to Figure 3.6 for the Main Board DC Supplies Block Diagram.

+5VDC Supply

The AC Power is routed to the +5VDC power supply. The power supply includes a full rectified diode bridge (D7, D8, D9 and D10), a filter capacitor (C17) and a voltage regulator (U2).

+12VDC Sensor Module Supply

The AC Power is routed to the +12VDC Sensor Module power supply. The power supply includes a full rectified diode bridge (D11, D12, D13 and D14), a filter capacitor (C8) and a voltage regulator (U4).

-12VDC Sensor Module Supply

The AC Power is routed to the -12VDC Sensor Module power supply. The power supply includes a half rectified diode bridge (D17 and D18), a filter capacitor (C13) and a voltage regulator (U6).

-24VDC Supply

The AC Power is routed to the -24VDC power supply. The power supply includes a full rectified diode bridge (D17, D18, D19 and D20), two filter capacitors (C13 and C14) and a voltage regulator (U7).

Watchdog Reset

A watchdog reset chip (U3) is used as a 5VDC monitor. When the +5VDC is above 4.75 VDC, the +12V-A will be enabled. In the event the power drops below 4.75 VDC the microprocessor will get reset.

Ambient Temperature Probe

The ambient temperature probe circuit consists of a temperature thermistor which provides the resistance for the RC network to a LM555 timer. The output of the timer is sent to the main PCB where the frequency is decoded into the ambient temperature.

Change 1

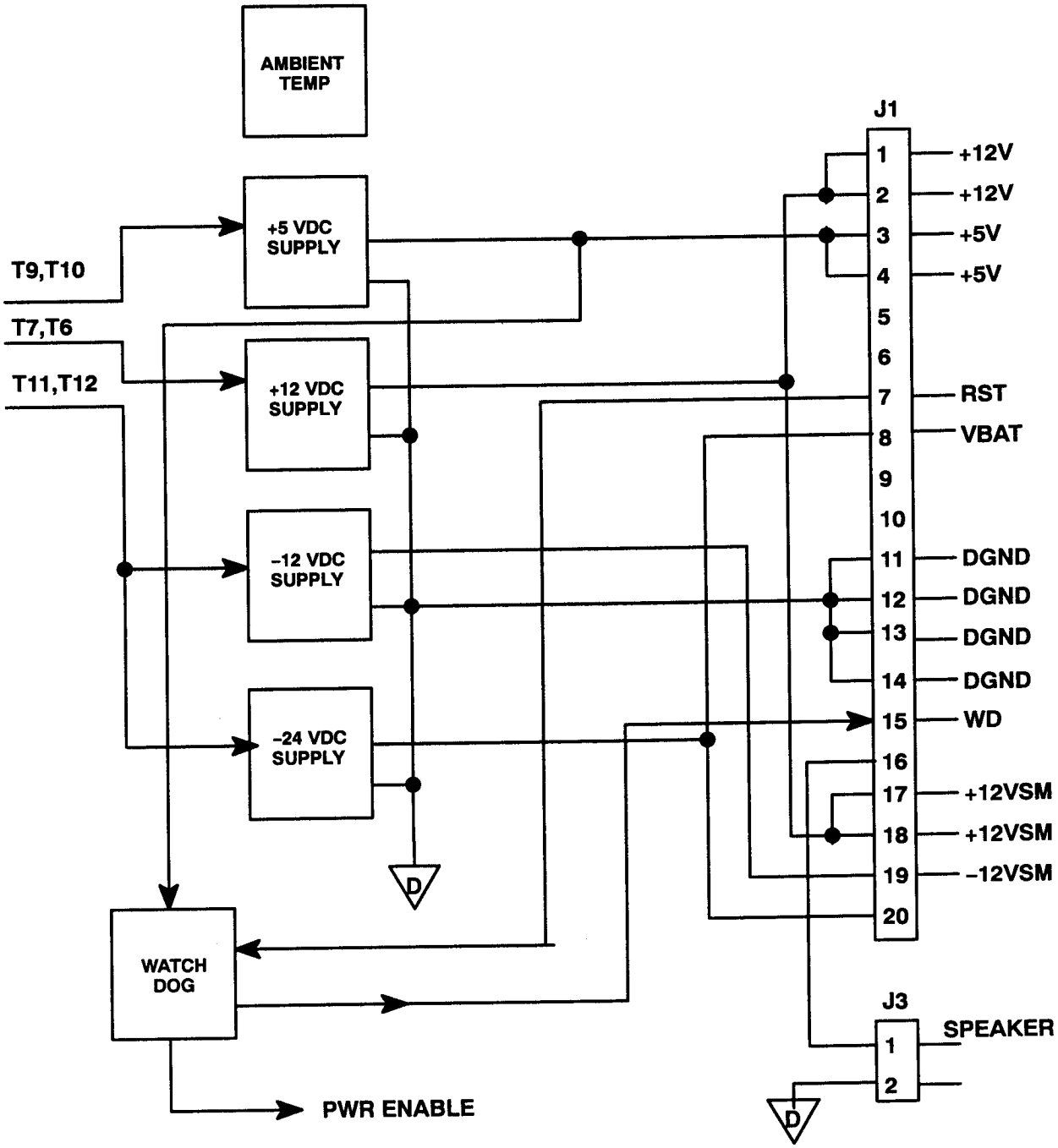


FIGURE 3.6 MAIN BOARD DC SUPPLIES FUNCTIONAL BLOCK DIAGRAM

VMOTOR Supplies

Refer to Figure 3.7 for the VMOTOR Supplies Block Diagram.

+VMOTOR Supply

The AC Power is routed to the +24VDC power supply. The power supply includes a full rectified diode bridge (D1, D2, D3 and D4), filter capacitors (C1, C3 and C4) and a voltage regulator (U8).

+12VDC–A Supply

The AC Power is routed to the +12VDC Sensor Module power supply. The power supply includes a full rectified diode bridge (D11, D12, D13 and D14), a filter capacitor (C8) and a voltage regulator (U4).

–12VDC–A Supply

The AC Power is routed to the –12VDC Sensor Module power supply. The power supply includes a half rectified diode bridge (D17 and D18), a filter capacitor (C13) and a voltage regulator (U6).

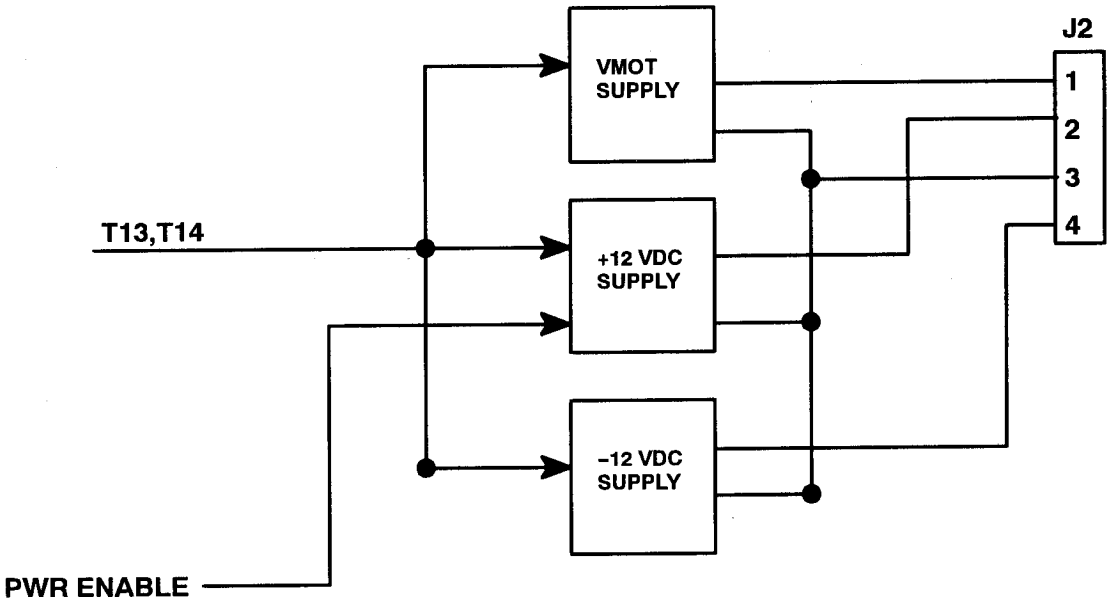


FIGURE 3.7 VMOTOR SUPPLIES FUNCTIONAL BLOCK DIAGRAM

Change 1

Display Board (Figure 3.8)

Switch Input

The Display Board contains eight switches. Seven switches are strobed with two strobe lines from the Main Board. The switch outputs are monitored by the Main Board via four descrete lines.

The eighth switch, Alarm Silence, is read and decoded independently by the Main Board on the SILA signal line.

LED Indicators

Three LED indicators: ALARM, >37 and POWER FAIL are driven by three descrete lines from the Main Board.

Contrast Control

The contrast for the LCD display is controlled by the Main Board pulsing the VOCTRL line. The pulses are pulse width modulated up and down in frequency that result in adjusting the contrast up and down.

Video Controller

The Video Controller consists of a 1330 Video Controller chip, a video timer logic and a video data latch. Video commands and data are transmitted to the video controller from the Main PCB via the 8 bit data bus. The data from the Main Board are then latched into the video latch. Data are clocked out of the video latch to the 1330 Video Controller chip under control of the video timer logic.

Change 1

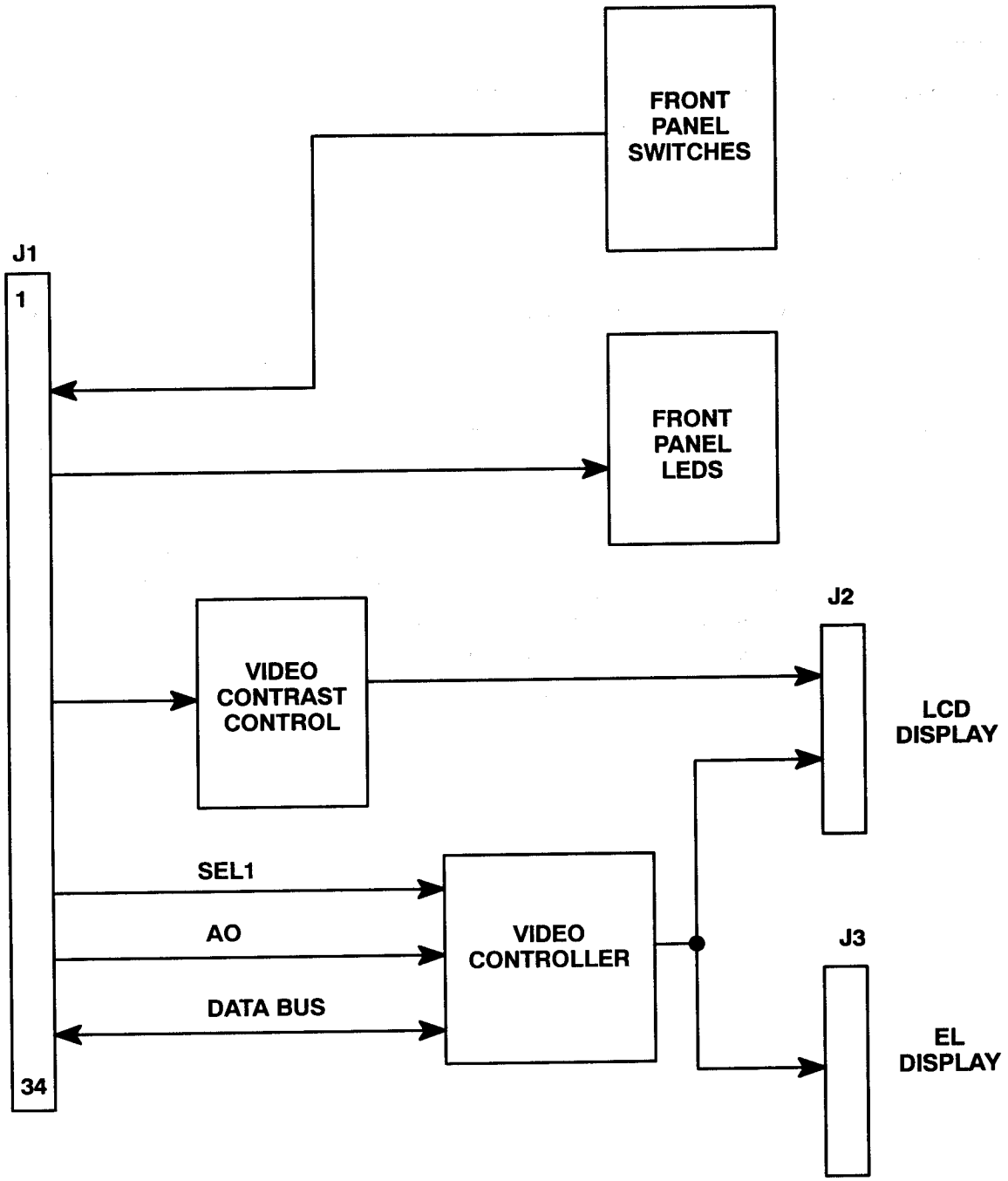


FIGURE 3.8 DISPLAY BOARD FUNCTIONAL BLOCK DIAGRAM

SECTION 4
PREVENTIVE MAINTENANCE

4.1 GENERAL

The section provides cleaning and maintenance instructions. Where necessary, disassembly instructions are provided. Calibration procedures should be performed annually except for the Weighing Scale which should be calibrated every six months.

Routinely inspect patient compartment for signs of breakage and replace assemblies before placing Incubator into service.

WARNING: Make sure that the oxygen supply to the Incubator is turned off and that the Incubator is disconnected from the oxygen supply when performing cleaning and maintenance procedures; a fire and explosion hazard exists when performing cleaning and/or maintenance procedures in an oxygen–enriched environment.

4.2 CLEANING

It is recommended that when an infant is discharged, or at least once a week, to thoroughly clean and disinfect the Incubator. The most effective way to clean is to first disassemble, then group the parts and/or assemblies in categories according to the method of cleaning required.

4.2.1 DISASSEMBLY FOR CLEANING

NOTE: *For routine cleaning there is no need to separate the Hood/Base assembly from the Pedestal/Stand. If separation is necessary, refer to the Installation Section.*

A. REFER TO PARAGRAPH 2.6.2, STEP B, and disconnect the cables from the Sensor Module and slowly raise the Hood.

CAUTION: Before lifting Incubator Hood for cleaning, ensure that all mounted accessories have been removed to prevent possible interference with the raised Hood.

B. REFER TO PARAGRAPH 2.6.2, STEP K and remove the X–ray Tray from the Mattress Tray.

C. REMOVE MATTRESS TRAY. Refer to Figure 4.1 and remove the Mattress Tray.

NOTE: *If the Incubator is equipped with a Weighing Scale, refer to Paragraph 4.2.2 and remove the scale from the unit before removing the Mattress Tray.*

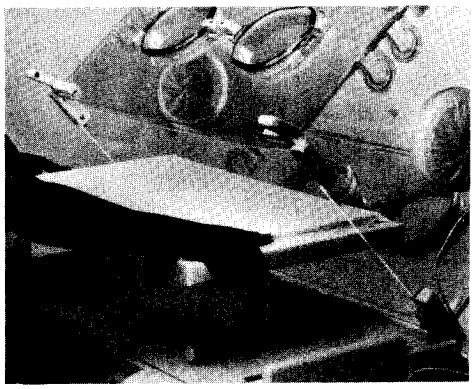


FIGURE 4.1: REMOVAL OF MATTRESS TRAY

D. REMOVE THE MATTRESS TILT BARS. Refer to Figure 4.2 and remove the Mattress Tilt Bars.

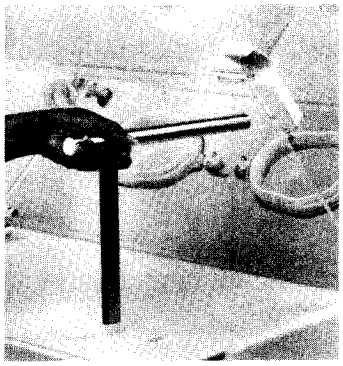


FIGURE 4.2: REMOVAL OF MATTRESS TILT BARS

E. REMOVE MAIN DECK.

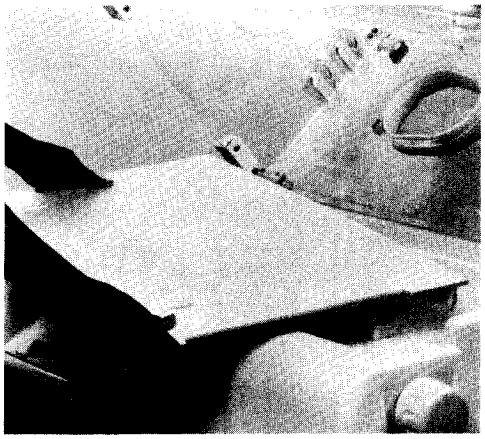


FIGURE 4.3: REMOVAL OF MAIN DECK

F. REMOVE THE HEATER/IMPELLER COVER

WARNING: The Heater can be sufficiently hot to cause burns; avoid removing or touching the heater until the unit has been switched off for at least 45 minutes.

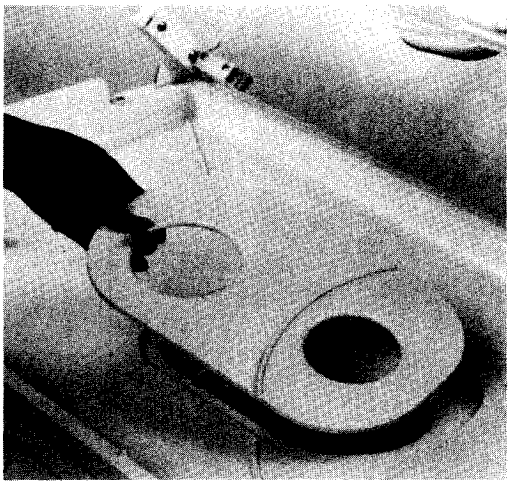


FIGURE 4.4: REMOVING THE HEATER/IMPELLER COVER

G. REMOVE THE HEATER AND IMPELLER. Refer to Figure 4.5 and unscrew the Heater. Pull the impeller off the motor shaft.

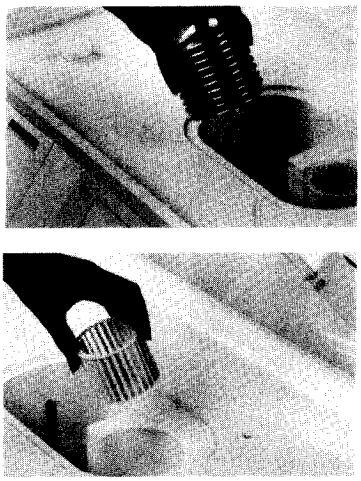


FIGURE 4.5: REMOVING THE HEATER RADIATOR AND IMPELLER

H. REMOVE THE HUMIDITY TRAY from the front of the Incubator first by withdrawing it to the fill position and then raising up and withdrawing it until it stops again.

Refer to Figure 4.6; stand the reservoir upright on the tray and disconnect the hose from the plastic reservoir. Remove the reservoir.

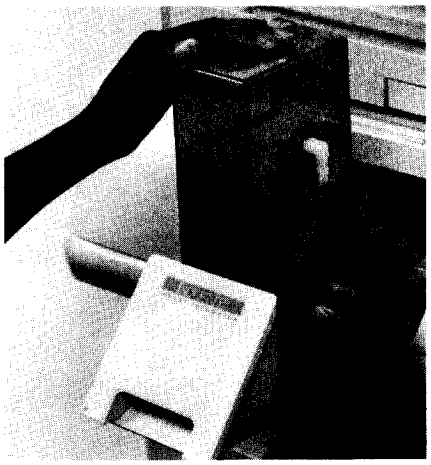


FIGURE 4.6: REMOVING THE HUMIDITY TRAY RESERVOIR

I. **REMOVE DISPOSABLE ACCESS DOOR CUFF** from each Access Door Gasket by pulling it off from the outside; discard the cuffs.

J. **REMOVE ACCESS DOOR GASKETS** from each side of the Hood by pulling them free.

K. **REMOVE TUBING ACCESS GROMMETS** from each side of the Hood by pulling them free.

L. **REMOVE DISPOSABLE IRIS ENTRY PORT SLEEVES** by pulling each Sleeve off the retainer rings. Wipe clean.

M. **REMOVE THE AIR INTAKE MICROFILTER COVER** by loosening the two thumbscrews. Refer to Figure 4.7.

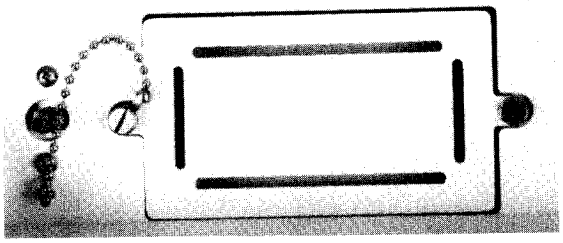


FIGURE 4.7: REMOVING THE AIR INTAKE MICROFILTER COVER

4.2.2 REMOVING THE WEIGHING SCALE

A. **DISCONNECT** the Scale/Sensor Module Cable from the Sensor Module.

B. **REFER TO FIGURE 2.3 AND REMOVE** the cable from the Clamps that hold it to the Incubator wall.

C. **LIFT THE SCALE AND MATTRESS TRAY** out of the Incubator.

4.2.3 CLEANING AGENTS

Use an iodophor or quaternary disinfectant detergent registered by the U.S. Environmental Protection Agency, but only after the Incubator is empty and disassembled as described in paragraph 4.2.1. You may use a cleanser such as Air-Shields Kleenaseptic®b Germicidal Surface Cleanser. When using any cleaning agent, follow the manufacturer's directions for use. After removing all solid wastes and contaminants from the disassembled parts, clean them as follows:

SKIN TEMPERATURE PROBE

Use a disinfectant-detergent to thoroughly clean all surfaces, then dry with a clean cloth or paper towel.

ACCESS DOOR GASKETS, AND TUBING ACCESS PORTS

Place the Access Door Gaskets and Tubing Access Ports into a suitable container filled with a disinfectant-detergent.

Allow them to soak as recommended by the cleaning solution's manufacturer, then remove them and dry completely with a clean cloth or paper towel.

Wipe these portions clean with a cloth dampened with a disinfectant-detergent.

CAUTION: Some chemical cleaning agents may be conductive and/or leave a residue which may permit a build-up of dust or dirt which may be conductive. Do not permit cleaning agents to contact electrical components. Do not spray cleaning solutions onto any of these surfaces.

HUMIDITY TRAY RESERVOIR

The Humidity Tray Reservoir can be cold sterilized or autoclaved.

CONTROLLER, SHELL AND PEDESTAL/STAND

Use a disinfectant-detergent to clean all surfaces thoroughly, then dry with a clean cloth or paper towel.

CAUTION: When cleaning the interior of the Incubator Shell, care must be taken to prevent liquids from entering the Motor Shaft Opening.

HOOD, SENSOR MODULE AND INNER WALLS

The Inner Walls are hinged on the Access Panel(s) or rear wall of the Incubator. Refer to Figure 4.8 and release the Inner Wall by pressing on the catches located at the top of the Inner Wall.

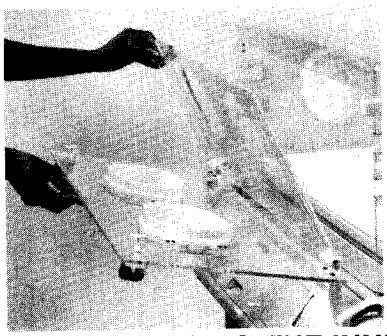


FIGURE 4.8: RELEASING THE INNER WALL

Use a disinfectant-detergent to clean all surfaces of the Hood thoroughly, including the Sensor Module, inner walls and access door(s). Make sure to clean all holes and indentations; then dry with a clean cloth or paper towel.

Change 2

CAUTION:

- **Alcohol can cause crazing of the clear Acrylic Hood. Do not use alcohol for cleaning.**
- **Do not expose the Hood assembly to direct radiation from germicidal lamps. Ultraviolet radiation from these sources can cause cracking of gaskets, fading of paint, and crazing of the clear Acrylic Hood.**

HEATER RADIATOR AND FAN IMPELLER

CAUTION: Failure to clean could result in sufficient lint build–up to reduce air flow, which will affect temperature control and cause high oxygen concentrations.

Remove any lint build–up on the heater radiator and fan impeller.

MATTRESS TRAY, MAIN DECK, HEATER/IMPELLER COVER AND MATTRESS TILT BARS

Use a disinfectant–detergent to clean all surfaces thoroughly, then dry with a clean cloth or paper towel.

AIR INTAKE MICROFILTER

Do not attempt to clean or reverse the microfilter. Replace it if visibly dirty or older than 3 months. Before installing a new filter, clean the Microfilter chamber and cover with a disinfectant–detergent.

WARNING: A dirty Inlet filter may affect oxygen concentration and/or cause carbon dioxide build–up. Be sure the filter is checked on a routine basis commensurate with local conditions. Particularly, if the Incubator is used in an unusually dusty environment, more frequent replacements may be necessary.

4.2.4 REASSEMBLY AFTER CLEANING

NOTE: *Inspect all cleaned components for any breakage or cracks before reassembling into the Incubator. Harsh cleaning agents may attack some of the plastics used in the Patient Compartment.*

A. **INSTALL THE HEATER RADIATOR AND FAN IMPELLER.**

B. **INSTALL THE HEATER/IMPELLER COVER.**

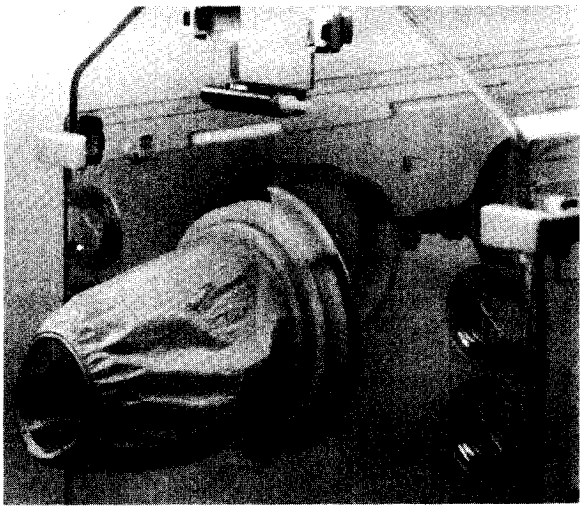
C. **INSTALL THE MAIN DECK.**

D. **INSTALL THE MATTRESS TILT BARS** on the Main Deck.

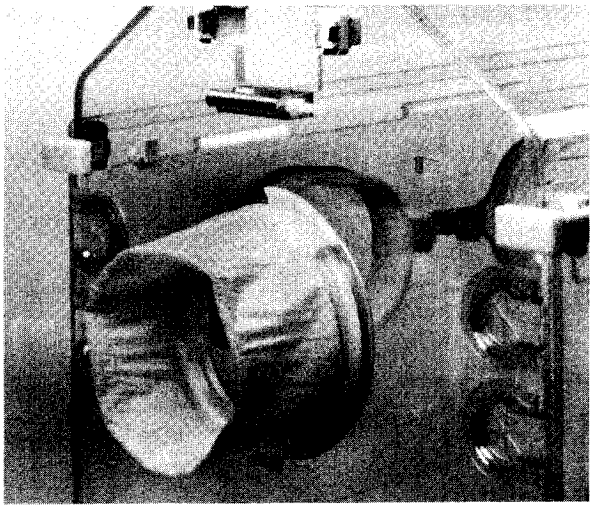
E. **INSTALL THE MATTRESS TRAY AND X–RAY TRAY.** If the Incubator is equipped with a Weighing Scale, refer to Section 2, Paragraph 2.4.1, Installation of the Weighing Scale, and perform steps D and E.

F. **INSTALL THE DISPOSABLE MATTRESS COVER.** Place a new disposable mattress cover over the mattress, then place the mattress onto the tray.

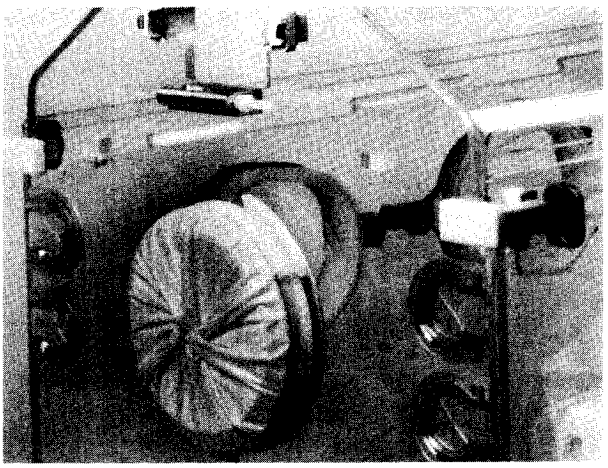
G. **INSTALL DISPOSABLE IRIS ENTRY PORT SLEEVES.** Install a new Iris Entry Port Sleeve as shown in Figure 4.9.



1. Install the smaller diameter elastic band of a new sleeve over the inner ring of the port housing.



2. Fold back and slip larger elastic band over the outer ring of the port housing.



3. Rotate outer ring to close. If properly installed, the sleeve will open again if rotation is reversed.

FIGURE 4.9: INSTALLATION OF IRIS ENTRY PORT SLEEVE

H. **INSTALL TUBING ACCESS PORTS** into the front and rear edges of each side of the Hood. Replace if distorted or torn.

I. **INSTALL AN ACCESS DOOR GASKET** on each Access Door, as shown in Figure 4.10.

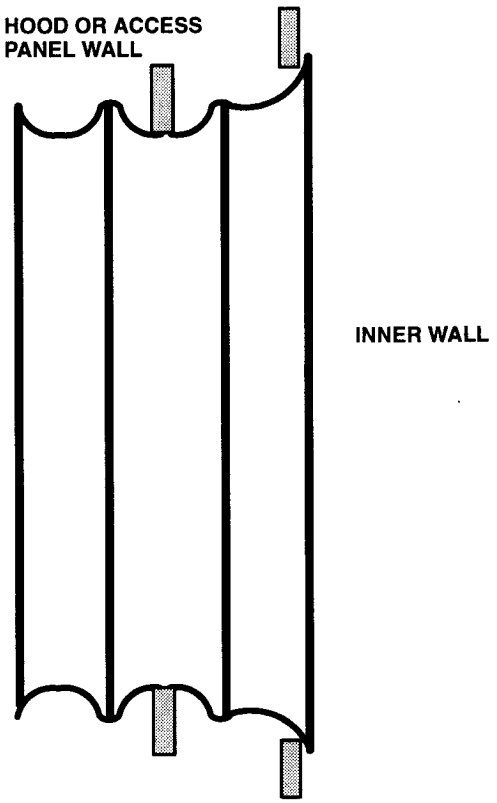


FIGURE 4.10: INSTALLATION OF ACCESS DOOR GASKET

J. **INSTALL A NEW ACCESS DOOR CUFF** onto each Access Door Gasket by stretching the larger diameter elastic band into the groove in the gasket. When installed correctly, the cuff has a small opening at its center. The Access Door should latch with slight pressure and should open when the latch lever is depressed.

NOTE: *If the Incubator is to be gas sterilized, wait until after sterilization to install new cuffs.*

K. **INSTALL A NEW AIR INTAKE MICROFILTER** if necessary (discolored or dirty). Replace the Air Intake Microfilter Cover and tighten the two thumbscrews.

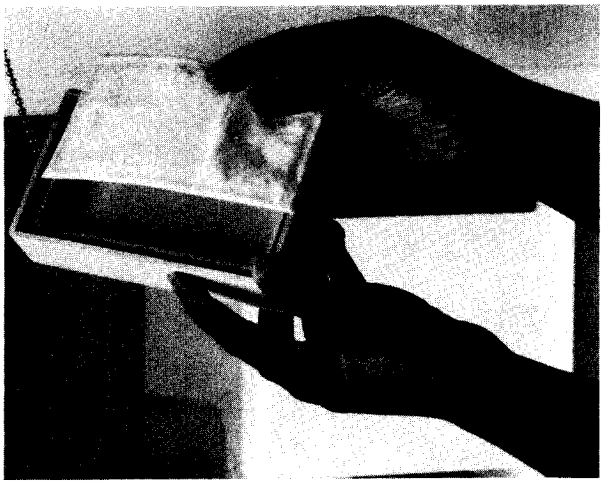


FIGURE 4.11: INSTALLING MICROFILTER

IMPORTANT: *Perform a complete functional checkout (Paragraph 2.6.2) before returning the unit to service.*

4.3 OXYGEN SENSOR CELLS

The Oxygen Sensor Cells should be replaced in pairs on an annual basis. Refer to Section 5 for a replacement procedure.

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100% OXYGEN

NOTE: *To perform the 100% Oxygen Calibration Procedure, the Incubator Hood must be equipped with the 100% Oxygen Calibration Fixture (Figure 5.2).*

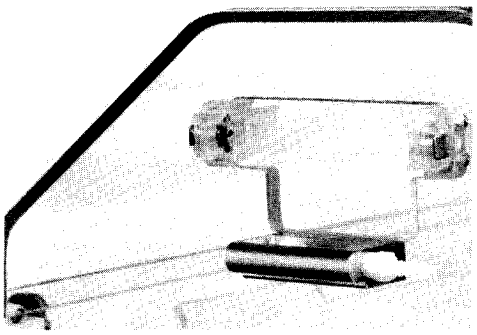


FIGURE 5.2 100% OXYGEN CALIBRATION FIXTURE

A. **CONNECT AN OXYGEN HOSE** to a 100% medical grade oxygen source at 3 to 5 lpm and to the barb fitting on the Calibration Fixture. Turn on the oxygen.

B. **ON DISPLAY 1, PRESS THE OXYGEN KEY.**

C. **PRESS THE ON KEY** and then the CAL Softkey.

D. **WITHDRAW THE SENSOR MODULE** from the Incubator Hood (Figure 5.1).

NOTE: *To prevent a CAL FAIL message, the Sensor Module must be withdrawn from the Hood within 5 seconds of pressing the Cal Softkey.*

100 % Cal

E. **WHEN CALIBRATION IS COMPLETE,** the message CAL PASS appears in the Oxygen Display. Return the Sensor Module. Press the ON Softkey.

F. **IF THE MESSAGE CAL FAIL** appears, repeat the procedure. If the calibration procedure is unsuccessful a second time, refer unit to qualified service personnel.

5.2.2 OXYGEN CONCENTRATION TEST USING THE INPUT VALVE ON THE REAR PANEL

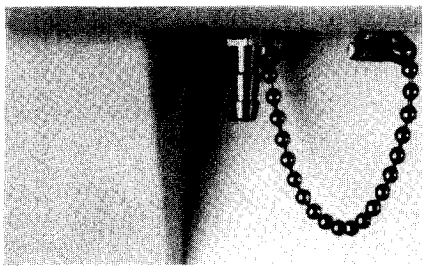
NOTE: *This test only applies to Units that are not equipped with an Oxygen Control System*

TOOLS REQUIRED

- O_2 Analyzer
- 3/16 – ID surgical tubing

TEST SET–UP

Connect the output of the oxygen flowmeter to the nipple of the Oxygen Input Valve (Figure 5.3) using 3/16–inch ID surgical tubing. An oxygen concentration guide is provided below. This guide also appears on the back of the Incubator.



OXYGEN CONCENTRATION GUIDE

OXYGEN SUPPLY	APPROX. OXYGEN %
3 lpm	**30–45**
6 lpm	**45–60**
9 lpm	**50–70**
12 lpm	**55–75**
15 lpm	**60–80**

ALLOW OXYGEN CONCENTRATIONS TO STABILIZE.

WARNING

OXYGEN FLOW RATES CAN NOT BE USED AS AN ACCURATE INDICATION OF OXYGEN CONCENTRATION IN AN INCUBATOR, OXYGEN CONCENTRATIONS MUST BE CONTINUOUSLY MONITORED WITH AN CALIBRATED OXYGEN ANALYZER.

FIGURE 5.3 OXYGEN INPUT VALVE AND OXYGEN CONCENTRATION GUIDE

1. Place a calibrated Oxygen Analyzer on the mattress in the Incubator.
2. Apply oxygen at the flow rates described.

5.2.3 WEIGHING SCALE CALIBRATION

Upon installation and every 6 months thereafter, the Scale should be calibrated using a calibrated weight (5 Kg Weight, Part Number 03 310 16) and the following procedure:

IMPORTANT: *The mattress should be level, i.e., not in the Trendelenburg or Reverse Trendelenburg position.*

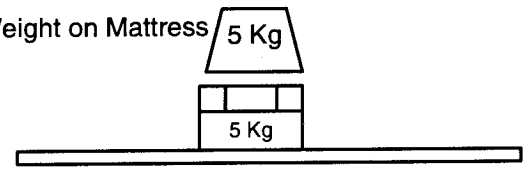
A. SELECT DISPLAY 2 and press the WEIGH Softkey.

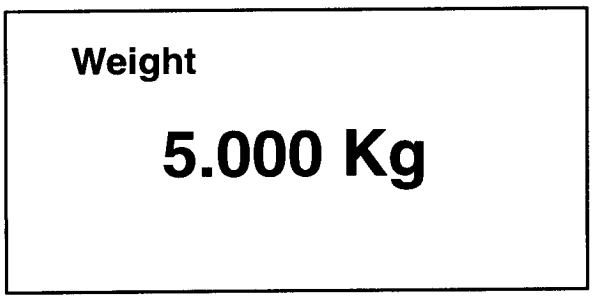
NOTE: *If necessary, remove any objects from the mattress before pressing the ZERO Softkey.*

Weight
wait

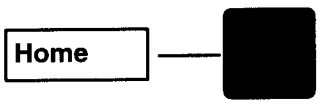
Weight

Place Calibrated Weight on Mattress





Remove Weight and press Home



5.2.4 HUMIDITY CALIBRATION SOFTWARE VERSIONS 1.02 AND 1.03

TOOLS REQUIRED

- Hygrometer– Vaisala Model HMI31 or equivalent

1. Place the calibrated hygrometer sensor through the Iris Port located below the Sensor Module. Turn on the unit.

2. Select Humidity on Display Number 1 and then turn the Humidity System ON. Select a Humidity Set Point of 95%.

3. When the hygrometer reaches 90% humidity, change the humidity Set Point on the Controller to match the reading on the hygrometer. Continue to change the humidity set point until the hygrometer stabilizes above 90%. A reading of 95% is preferred.

4. If the Humidity Display reading on the Incubator is 5% lower (display 89%, hygrometer 89%) than the hygrometer humidity reading, proceed to step 17. However, if the humidity on the Display is significantly higher (display 95%, hygrometer 87%), the humidity in Incubator will not be high enough to calibrate the Sensor Module. Proceed to step 5.

NOTE: *If the display reads 0%at high humidity (>70%), it means that the Senor is calibrated too high, proceed to step 5.*

5. Turn the unit off. Immediately turn the unit on while holding the ALARM/SILENCE Key. The Installation/ Set–Up menus will appear.

6. Press the fourth Blue Key. The Humidity Calibration Screen will appear. The YEAR selection will be highlighted. Use the Up/Down Arrow Keys to enter the current year.

7. Press the Display Selection Key

The MONTH selection will be highlighted. Use the Up/Down Arrow Keys to enter the current Month.

8. Press the Display Selection Key

9. Use the UP Arrow Key to set the CALIBRATION RH% VALUE TO 91%.

10. Position a container of hot steaming water under the Humidity Sensor Housing. Wait 1 minute. Press the forth Blue Key, a beep will be heard, indicating that the high calibration constant has been stored in the Sensor Module.

11. DO NOT LEAVE THE RH CALIBRATION SCREEN.

12. Open the Access Panel(s) and permit the Hood to dry out for at least 10 minutes. If the Hood is very wet, it may be necessary to dry the walls and remove the mattress. Close the Access Panel(s). Monitor the reading on the hygrometer. If the reading is not below 30%, pump oxygen directly into the Hood through the Iris Port opposite the Sensor Module.

13. Use the UP/DOWN Arrow Keys to change the CALIBRATION RH% value to match the reading on the hygrometer.

14. When the humidity in the Hood as measured by the hygrometer is below 30%, press the fourth Blue Key. A beep will be heard to indicate that the low calibration constant has been stored in the Sensor Module.

    DO NOT STORE A CAL VALUE OF 30.

15. Turn the unit off, then on. Turn the Humidly on. Use the up/Down Arrow Keys to set the Humidity Set Point to 90%.

16. While monitoring the humidity on the hygrometer, adjust the humidity set point such that the humidity as measured by the hygrometer is controlled above 90%. A reading of 95% is preferred.

NOTE: *If you notice the hygrometer reading is rapidly approaching 90% and the Display is 80% or less, lower the set point to 5% of the displayed value and permit the humidity to stabilize. You may have to adjust the set point to keep the hygrometer reading from reaching 100%.*

17. When the humidity has stabilized, turn the unit off. Immediately turn the unit on while holding the ALARM/SILENCE Key.

18. Press the fourth Blue Key. The Humidity Calibration Screen will appear. The YEAR selection will be highlighted. Use the Up/Down Arrow Keys to enter the current year.

19. Press the Display Selection Key

The MONTH selection will be highlighted. Use the Up/Down Arrow Keys to enter the current Month.

20. Press the Display Selection Key

The CALIBRATION RH % value will be highlighted. Wait 10 minutes.

21. Use the Up/Down Arrow Keys to change the CALIBRATION RH% value to match the reading on the Hygrometer.

    DO NOT STORE A CAL VALUE OF 90.

22. Press the fourth Blue Key. A beep will be heard to indicate that the high calibration constant has been stored in the Sensor Module.

23. DO NOT LEAVE THE RH CALIBRATION SCREEN.

24. Open the Access Panel(s) and permit the Hood to dry out for at least 10 minutes. If the Hood is very wet, it may be necessary to dry the walls and remove the mattress. Close the Access Panel(s). Monitor the reading on the hygrometer. If the reading is not below 30%, pump oxygen through the Oxygen Input Valve.

25. When the humidity in the Hood as measured by the hygrometer is below 30%, use the UP/DOWN Arrow Keys to change the CALIBRATION RH% value to match the reading on the hygrometer.

    DO NOT STORE A CAL VALUE OF 30.

26. Press the fourth Blue Key. A "beep" will be heard to indicate that the low calibration constant has been stored in the Sensor Module.

27. Reinstall the Mattress. Turn the unit off and then on. Turn the Humidity on. Verify that the Humidly display matches the hygrometer reading within 2%.

28. Use the Up/Down Arrow Keys to set the Humidity Set Point to 95%. Verify that the humidity is being controlled at 95% and the hygrometer reading is with 2% of the Humidly Display. If the readings do not correlate, repeat Steps 1 through 28.

29. The humidity calibration is complete. The calibration's values are stored in the Sensor Module memory, therefore, the Sensor Module may be moved from Incubator to Incubator without the need for calibration.

5.2.5 HUMIDITY CALIBRATION SOFTWARE VERSIONS 1.04 AND HIGHER

TOOLS REQUIRED

- Hygrometer– Vaisala Model HMI31 or equivalent

PROCEDURE – LOW HUMIDITY LESS THAN 30%

1. Place the calibrated hygrometer sensor through the Iris Port located below the Sensor Module. Turn on the unit. Select Humidity on Display Number 1 and then turn the Humidity System OFF.
2. Run the unit until the hygrometer reads less than 30% (The lower the reading the better).

NOTE: *Oxygen may be ran into the Incubator either by the Input Valve or the Oxygen Control System (Accessory) to help in the drying out of the Incubator.*

3. When the Incubator is dried out, turn the unit off and then on while holding the Silence/Reset Key. The Installation/Set–Up menus will appear.

NOTE: *If the Controller is software version 1.00, the fourth Blue Key will be identified as the Humidity Calibration Screen. If the Controller is software version 1.10 or higher, the fourth Blue Key will not be identified.*

4. Press the fourth Blue Key. The Humidity Calibration Screen will appear. The YEAR selection will be highlighted. Use the Up/Down Arrow Keys to enter the current year.
5. Press the Display Selection Key

The MONTH selection will be highlighted. Use the Up/Down Arrow Keys to enter the current Month.

6. Press the Display Selection Key

The CALIBRATION RH % value will be highlighted. Wait 10 minutes.

7. After 10 minutes, use the Up/Down Arrow keys to change the CALIBRATION RH% value to a value that matches the current reading on the hygrometer.

CAUTION: If the hygrometer reads 30% or greater, dry out the Hood until the reading is less than 30%. DO NOT ENTER A CALIBRATION RH % VALUE OF 30.

8. Press the fourth Blue Key. A "beep" will be heard to indicate that the low calibration constant has been stored in the Sensor Module.
9. Turn the Incubator off, then on. Select Humidity on Display Number 1 and then turn the Humidity System ON.
10. Verify that the Humidity Display reading is within 2% of the hygrometer reading. If the readings are not within 2%, repeat steps 2 through 9.

PROCEDURE – HIGH HUMIDITY GREATER THAN 90%

1. Place the calibrated hygrometer sensor through the Iris Port located below the Sensor Module. Turn on the unit. Select Humidity on Display Number 1 and then turn the Humidity System ON. Select a Humidity Set Point of 95%.

2. When the hygrometer reaches 90% humidity, change the humidity Set Point on the Controller to match the reading on the hygrometer. Continue to change the humidity set point until the hygrometer stabilizes above 90%. A reading of 95% is preferred.

3. If the Humidity Display reading on the Incubator is 5% lower (display 89%, hygrometer 89%) than the hygrometer humidity reading, proceed to step 12. However, if the humidity on the Display is significantly higher (display 95%, hygrometer 87%), the humidity in the Incubator will not be high enough to calibrate the Sensor Module. Proceed to step 9.

NOTE: *If the display reads 0%at high humidity (>70%), it means that the Senor is calibrated too high, proceed to step 4.*

4. Turn the unit off and then on while holding the Silence/Reset Key. The Installation/Set–Up menus will appear.

5. Press the fourth Blue Key. The Humidity Calibration Screen will appear. The YEAR selection will be highlighted. Use the Up/Down Arrow Keys to enter the current year.

6. Press the Display Selection Key

The MONTH selection will be highlighted. Use the Up/Down Arrow Keys to enter the current Month.

7. Press the Display Selection Key

The CALIBRATION RH % value will be highlighted. Wait 10 minutes.

8. Use the up Arrow Key to change the CALIBRATION RH (%) to 91%.

9. Position a container of hot steaming water under the Humidity Sensor Housing. Wait 1 minute. Press the fourth Blue Key. A beep will be heard, indicating that the high calibration constant has been stored in the the Sensor Module.

10. Turn the unit off, then on. Turn the Humidity on. Set the humidity set point to 90%.

11. While monitoring the humidity measurement on the hygrometer, adjust the humidity set point such that the humidity in the Incubator measured by the hygrometer is above 90%. A reading of 95% is preferred.

NOTE: *If you notice the hygrometer reading is rapidly approaching 90% and the Display is 80% or less, lower the set point to 5% of the displayed value and permit the humidity to stabilize. You may have to adjust the set point to keep the hygrometer reading from reaching 100%.*

12. When the humidity has stabilized, turn the unit off. Immediately turn the unit on while holding the ALARM/SILENCE Key.

13. Press the fourth Blue Key. The Humidity Calibration Screen will appear. The YEAR selection will be highlighted. Use the Up/Down Arrow Keys to enter the current year.

14. Press the Display Selection Key

The MONTH selection will be highlighted. Use the Up/Down Arrow Keys to enter the current Month.

Change 2

15. Press the Display Selection Key

The CALIBRATION RH % value will be highlighted. Wait 10 minutes.

16. After 10 minutes, use the Up/down Arrow keys to change the CALIBRATION RH% value to a value that matches the current reading on the hygrometer.

IMPORTANT: IF THE HYGROMETER READS 90% CONTINUE TO INCREASE THE HUMIDITY IN THE HOOD UNTIL IT IS GREATER THAN 90%. DO NOT ENTER A CALIBRATION VALUE OF 90.

17. Press the fourth Blue Key. A "beep" will be heard to indicate that the high calibration constant has been stored in the Sensor Module.

18. Turn the Incubator off, then on. Select Humidity on Display Number 1 and then turn the Humidity System ON and select a Set Point of 95%.

19. Verify that the Humidity Display reading is within 2% of the hygrometer reading. If the readings are not within 2%, repeat steps 1 through 12.

20. The Humidity Calibration is complete. The calibration's values are stored in the Sensor Module memory, therefore, the Sensor Module may be moved from Incubator to Incubator without the need for calibration.

5.3 FUNCTIONAL TESTS

5.3.1 LEAKAGE CURRENT TEST

TOOLS REQUIRED

- Leakage Tester

TEST SET-UP

1. Connect the Controller to the primary power source through an ungrounded adapter plug so that the unit is ungrounded. Turn the power switch *On*.
2. The leakage current test standards, provided in the test procedures below, assume leakage through a resistance of 1000 Ohms. If the Leakage Tester being used does not provide this resistance, the test set-up must be adjusted to provide it.
3. Perform the above steps (1 and 2) with the Controller power switch *Off*.

TEST PROCEDURES

1. Use the Leakage Current Tester to measure between the chassis of the unit under test and a known ground such as the ground connection of a wall receptacle. The leakage current must not exceed 300 uA for 100/120 Vac Units or 500 uA for 220/240 Vac Units.
2. Reverse the plug and repeat the previous step.

5.4 GENERAL TROUBLESHOOTING GUIDELINES

Below in Table 5.1 are Troubleshooting Guidelines for the **Isolette® Infant Incubator.**

TABLE 5.1: TROUBLESHOOTING

Symptom	Verify	Action
MOTOR FAIL Alarm	– Voltages to Main Board Connector J8 are OK – Voltages on Main Board Connector J8 are not OK	Replace Main Board Replace Power Supply Board
HEATER FAIL Alarm	– Heater Thermostat in Heater Stick is OK	Replace Main Board
LOW AIR FLOW Alarm or No LOW AIR FLOW Alarm	– Air Flow Sensor is OK	Replace Main Board
EEPROM FAIL Alarm	– No Verification Required	Replace Main Board
SENSOR MODULE FAIL Alarm	– Sensor Module is OK	Replace Main Board
CONTROLLER FAILURE 1	– No Verification Required	Replace Main Board
CONTROLLER FAILURE 2	– No Verification Required	Replace Main Board
CONTROLLER FAILURE 3	– No Verification Required	Replace Power Supply
CONTROLLER FAILURE 4	– Cooling Fan OK	Replace Power Supply
Blank Display	– No AC Power on TB1–5 and TB1–6	Check Fuses
	– No SEL1 Activity on Display Board J1	Replace Main Board
	– Activity on SEL1 on Display Board J1	Replace Display Board
	– Activity on Video Lines of Display Board J2 and J3	Replace Display
Controller Resetting	– 5VDC below 4.75VDC	Replace Power Supply
Temp keep rising to High Temp Cutout	– Heater AC ON Continuously. No Pulsing.	Replace Main Board
Air Temperature Doesn't Rise	– No Pulsing AC on Main Board Terminal J7–1 and J7–3	Replace Main Board
Humidity Doesn't Rise	– No Pulsing AC on Main Board Terminal J7–2 and J7–4	Replace Main Board
Oxygen Doesn't Rise	– No Pulsing 12VDC	Replace Main Board
No Door Open Indicator	– No Verification Required	Replace Main Board
No Alarm Audio	– Cables Connected Correctly	Replace Main Board
No Power Fail Audio	– No Verification Required	Replace Main Board
Can Not Select Functions with Keys.	– No Verification Required	Replace Display Board
LEDs Does Not Illuminate	– No Verification Required	Replace Display Board

Change 1

TABLE 5.2: TROUBLESHOOTING VHA PEDESTAL /STAND (OPTION)

SYMPTOM	POSSIBLE CAUSE	REMEDY
Stand will not move up or down	a. Power Switch not on.	a. Turn on MAIN POWER Switch.
	b. Power Cord unplugged.	b. Connect power cord to ac line.

5.5 REMOVAL AND REPLACEMENT PROCEDURES

This section provides the removal and replacement procedures for the **Isolette® Infant Incubator.** Removal and replacement of components not described are obvious upon inspection.

5.5.1 CONTROLLER

CAUTION: Handle the Controller with care. The fan motor blades are unprotected and may be damaged by excessive pressure or contact with the shell.

1. Disconnect the AC Power cord from the Controller and, if necessary, the cable attached to the RS-232 Port.
2. Remove the two wing nuts located next to the AC Power Connector and the RS-232 Port.
3. Slide the Controller out from the Shell until the rear panel connectors are visible. Disconnect the cables from the rear panel and remove the Controller.

5.5.2 CONTROLLER EEPROM

TOOLS REQUIRED

- Phillips Head Screw Driver
- Small Blade Screw Driver
- Long Nose Pliers

IMPORTANT: *Static sensitive components involved. Static Handling Precautions required.*

1. Remove the Controller from the Isolette® Infant Incubator. Place the Controller on a flat surface. The software EEPROM can be seen through the square opening below the Product Identification/Data Tag.
2. Use the small screw driver to partially pry the EEPROM away from the socket. Grab the EEPROM with the long nose pliers and remove it from the chassis.
3. Inspect the legs of the replacement EEPROM. They must not be flaring outward or inward. If the pins are not straight, they should be pressed against the surface of a table.

4. Use the long nose pliers to install the replacement EEPROM. MAKE SURE THE CHIP NOTCH IS UP. Make sure the EEPROM is positioned straight on the socket and that all pins of the EEPROM are installed into the socket.

5. Use your finger to press down on the EEPROM so that it is firmly seated in the socket.

6. Reinstall the Controller in the Isolette® Infant Incubator. Turn on the unit and verify the new software version is displayed on the Isolette® Screen and is followed by a "D" (Domestic) or an "I" (International). Run the unit for 15 minutes to ensure no failures occur.

7. Refer to Section 2 and perform the Operational Checkout Procedure for the Controller.

5.5.3 CONTROLLER DISPLAY

1. Remove the Controller from the Isolette® Infant Incubator. Place the Controller on a flat surface.

2. Remove the four Phillips head screws located at the corners behind the Display.

3. Lift the Display from the Controller. Disconnect the ribbon cable.

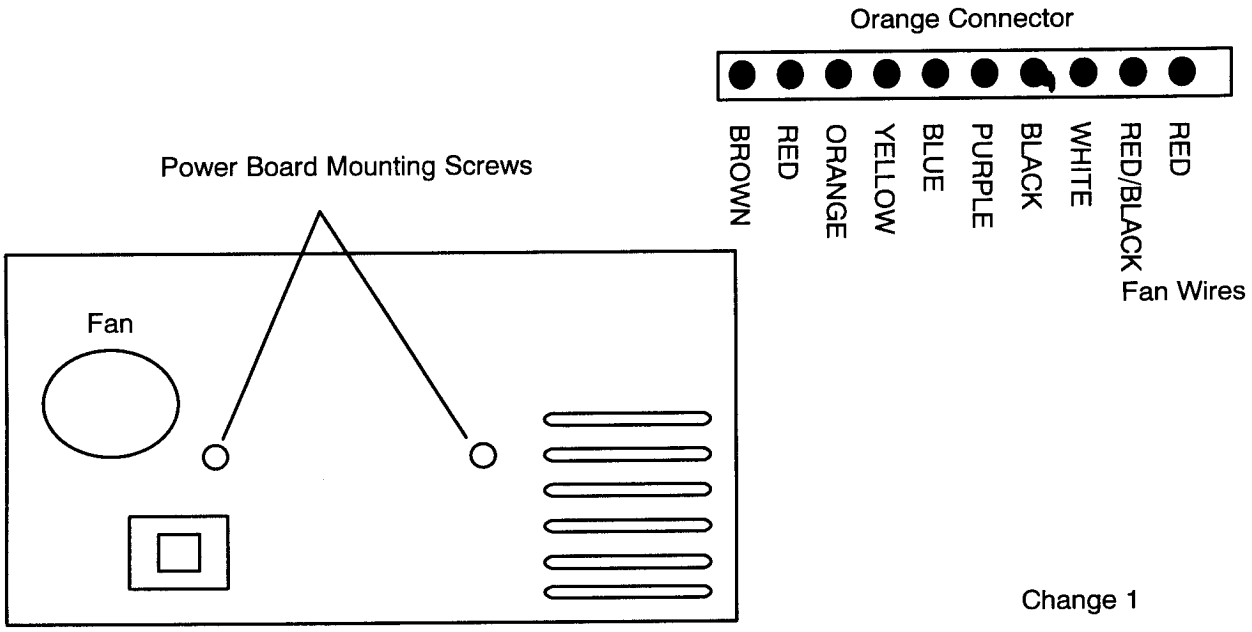
5.5.4 CONTROLLER POWER BOARD (Refer to Figure 5.4)

1. Remove the Controller from the Isolette® Infant Incubator. Place the Controller on a flat surface.

2. Remove the Display Board as described above. Remove the Speaker from the Chassis.

4. Disconnect and mark the wires from the Orange Connector. Remove the green/yellow ground wire and the hardware from the chassis.

5 Remove the Power Board Mounting Screws from the bottom of the Chassis and carefully remove the Power Board.



Change 1

FIGURE 5.4 POWER BOARD REMOVAL

6. To replace the Board perform steps in reverse order.

5.5.5 COMPUTER BOARD

1. Remove the Display and Power Boards as described above.

NOTE: The wires on the Orange Connector of the Power Board do not have to be removed.

2. Remove the mounting hardware from the Green Connectors and the two "D" connectors.

3. Disconnect the Sona–Alert Connector and remove the Computer Board.

5.5.6 SENSOR MODULE

1. Withdraw the Sensor Module from the Hood until it stops. Pull out the clip located on the left side of the Module and remove the Module from the Hood.

2. The Sensor module is held together with four 6– 32 x 5/16 inch screws (Figure 6.8)

5.5.7 OXYGEN SENSOR CELL REPLACEMENT

TOOLS REQUIRED

- Phillips Head Screw Driver

1. Remove the Sensor Module from the Hood.

2. Remove the Mounting Plate from the bottom of the Sensor Module. Disconnect the leads from the Sensors.

3. Unscrew the Sensors from the Mounting Plate and install the replacement Sensors.

IMPORTANT: *Both Sensors should be replaced at the same time.*

4. Connect the Sensor Cells to the Sensor Module. Install the Mounting Plate on the Sensor Module. Replace the Sensor Module in the Hood.

5. Refer to paragraph 5.2.1 and perform the calibration procedure.

Change 1

5.5.8 CHECK VALVE ASSEMBLY

TOOLS REQUIRED

- Phillips head Screw Driver
- 12 inch long Wooden Prop
- Pliers

1. Disconnect the Power Cord from the Controller.
2. Refer to Figure 6.14 and remove the four screws (Item 41) and washers (Items 47 and 48). Retain the hardware.
3. At the Controller end of the Incubator, lift the Upper Shell using the Mattress Tilt Knob and the rear Hood hinge.
4. Insert the wooden prop between the Upper and Lower Shells.
5. Disconnect the three hoses from the existing Check Valve. Remove the Filter Cover (3). Remove the Check Valve (13) by removing screw, Item 33. Retain the screw.
6. Install the Check Valve provided using the screw retained in Step 5. Connect the three hoses.
7. Remove the prop and lower the Upper Shell in place. Make sure the Shell Gasket is fitted properly. Replace the shell hardware (Step 2). Replace the Filter Cover.
8. Perform the Operational Checkout procedure described in the Operator's or Service Manual.

5.5.9 MOTOR ASSEMBLY

TOOLS REQUIRED

- Phillips Head Screw Driver
- 12 Inch Long Wooden Prop

1. Disconnect the Power Cord from the Controller.
2. Lift the Hood and remove the Mattress Tray, Tilt Bars, Main Deck and Heater/Impeller Cover.
3. Remove the Impeller from the Motor Shaft. Lower the Hood.
4. Refer to Figure 6.14 and remove the four screws (Item 41) and washers (Items 47 and 48).
5. At the Controller end of the Incubator, lift the Upper Shell using the Mattress Tilt Knob and the rear Hood hinge.
6. Insert one of the Tilt Bars between the Upper and Lower Shells.
7. Disconnect the motor ribbon cable. Remove the four screws holding the Motor to the Upper Shell. Retain the hardware.
8. Install the Motor provided with the hardware retained in Step 7. Connect the Ribbon Cable.

9. Remove the Tilt Bar and lower the Upper Shell in place. Make sure the Shell Gasket is fitted properly.
10. Install the Impeller provided on the Motor Shaft. Reassemble the Incubator.
11. Perform the Operational Checkout procedure described in the Operator's or Service Manual.

5.5.10 ACCESS PANEL REPLACEMENT

TOOLS REQUIRED

- Phillips head Screw Driver
- Access Panel Gauge Air-Shields Part Number 83 900 14.

1. Open the Access Panel. Remove the Mattress Tray and Tilt Handles.
2. Close and latch the Access Panel. Refer to Figure 6.1 and remove the shoulder screws and washers from the Access Panel hinges.
3. Remove the Access Panel from the unit and transfer the hardware to the replacement Access Panel. Mount the replacement panel on the hinges.
4. Loosen but do remove the four screws holding the Hinge Plates (Figure 5.5).
5. Refer to Figure 5.5 and close the Access Panel on the gauge at the location illustrated. Make sure the Access Panel is latched.

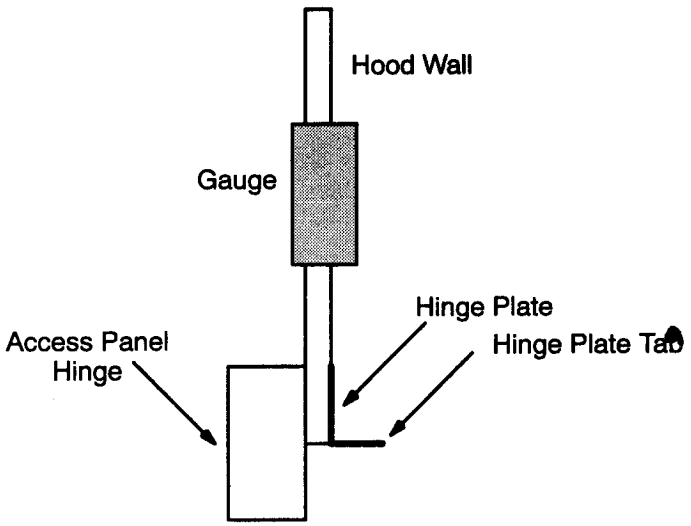


FIGURE 5.5 ACCESS PANEL INSTALLATION

6. Push the left end Access Panel firmly against the Gauge. Tighten the rear screw of the Hinge Plate. Place the gauge on the right side. Press the Panel firmly against the Gauge. Tighten the rear screw of the Hinge Plate.
7. Hold the shim and open the Access Panel. While holding down on the Hinge Plate Tab, tighten the front Hinge Plate screws.
8. Open the Access Panel and the close it. Make sure the Panel latches properly. If the Access Panel does not latch properly, readjust the latch keepers.

SECTION 6
PARTS LIST

6.1 GENERAL

This section provides the parts lists for the **Isolette® Infant Incubator.** Part numbers of operator replacement parts, disposables, accessories and single use items are provided below:

6.2 RECOMMENDED SPARE PARTS

SPARE PARTS (QUANTITY OF 1)	PART NUMBER
Motor Assembly	83 900 15
Access Door Latch	83 300 65
Latch Mount, Access Door	83 300 15
Grommet, Access	83 200 20
Access Door	83 300 05
Bumper, Self-Adhesive	78 293 10
Pivot Hinge, Access Door	83 300 08
Spring, Torsion, Access Door	68 510 10
Latch, Heat Shield	83 300 09
Gasket, Access Door	83 300 07
Switch, 10 Amps	83 400 14
Sensor Module	83 005 50
Impeller, Motor	68 205 41
Lower Body, Access Panel Latch	83 300 25
Upper Body, Access Panel Latch	83 300 26
Slide Assembly, Access Panel Latch	83 300 60
Spring, Access Panel Latch	83 300 29

6.3 OPERATOR REPLACEABLE PARTS, DISPOSABLES AND ACCESSORIES

Swivel Drawer Assy, Large	83 440 00
Swivel Drawer Assy, Small	83 441 00
Monitor Shelf Assembly, HiLo, Isolette®	82 442 00
Oxygen Tank Bracket Assembly, Isolette®	83 443 00
IV Pole Assembly, Isolette®	83 444 00
Humidity System Assembly, 120 V	83 610 70
Humidity System Assembly, 240 V	83 610 80
Scale Assembly	83 600 50
Probe, Baby Temp, Reuse, Isolette®	83 102 10
Oxygen Assembly, Green DISS	83 620 50
Oxygen Assembly, Green	83 620 51
Oxygen Assembly, White	83 620 52
Oxygen Assembly, Blue	83 620 53
Filter, Replacement Pack of 4, Isolette®	83 101 30
Iris Port Cuffs, Disp, Soft, 100	68 120 71
Access Door Cuff, Replacement, Ctn of 100	83 300 11

Deleted

Change 1

6.3 OPERATOR REPLACEABLE PARTS, DISPOSABLES AND ACCESSORIES (Cont.)

Shell Top, Replacement Kit, Eng	83 900 01
Shell Top, Replacement Kit, Spn	83 900 02
Shell Top, Replacement Kit, Frn	83 900 03
Shell Top, Replacement Kit, Ger	83 900 04
Shell Top, Replacement Kit, Itl	83 900 05
Isolette® Lift Bar Replacement Kit	83 900 11
Isolette® Scroll Cover Replacement Kit	83 900 12
Humidity System Assembly Kit, 120 V	83 610 70
Humidity System Assembly Kit, 240 V	83 610 80
Oxygen Assembly, Green DISS	83 620 50
Oxygen Assembly, Green	83 620 51
Oxygen Assembly, White	83 620 52
Oxygen Assembly, Blue	83 620 53

TABLE 6.1: INCUBATOR HOOD/SHELL ASSEMBLY, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
1		**SERIES 00 HOOD ASSEMBLIES**	
	TABLE 6.2	HOOD ASSY, HI, DUAL ACCESS, 2IP	83 200 70
	TABLE 6.3	HOOD ASSY, HI, FRT ACCESS, 2AD, 2IP	83 200 71
	TABLE 6.4	HOOD ASSY, HI, DUAL ACC, 1AD, 1IP	83 200 72
	TABLE 6.5	HOOD ASSY, HI, DUAL ACCESS 2AD	83 200 73
	TABLE 6.6	HOOD ASSY, FRT ACCESS 4AD	83 200 74
		SERIES 01 HOOD ASSEMBLIES	
	TABLE 6.9	HOOD ASSY, HI, DUAL ACCESS, 2IP	83 200 77
	TABLE 6.10	HOOD ASSY, HI, FRT ACCESS, 2AD, 2IP	83 200 78
	TABLE 6.11	HOOD ASSY, HI, DUAL ACC, 1AD, 1IP	83 200 79
	TABLE 6.12	HOOD ASSY, HI, DUAL ACCESS 2AD	83 200 80
	TABLE 6.13	HOOD ASSY, FRT ACCESS 4AD	83 200 81
2	TABLE 6.14	ACCESS PANEL, HIGH, FRONT ASSY **SERIES 00**	83 300 71
	TABLE 6.7	ACCESS PANEL, HIGH, FRONT ASSY **SERIES 01**	83 300 76
3		SCR, SHLDR, .25D .38L, 10-24 SS NYK	99 195 05
4		BEARING 0.251 ID 0.290 D 0.41 FLG NY	83 001 21
5		WSHR, FL, .257ID .38OD .02T NYL	99 125 28
6	TABLE 6.11	SENSOR MODULE ASSEMBLY	83 005 50
7	TABLE 6.8	ACCESS PANEL, HIGH, REAR ASSEMBLY (NOT SHOWN) **SERIES 00**	83 300 71
	TABLE 6.8	ACCESS PANEL, HIGH, REAR ASSEMBLY (NOT SHOWN) **SERIES 01**	83 300 77
8 AND 9		NOT USED	
10		MATTRESS, FOAM	83 001 00
11		MATTRESS TRAY	83 001 01
12		TRAY, XRAY	83 001 02
13	TABLE 6.10	CONTROLLER ASSEMBLY, LCD, 120 V	83 006 70
		CONTROLLER ASSEMBLY, EL, 120 V	83 006 71
		CONTROLLER ASSEMBLY, LCD, 220 V	83 006 80
		CONTROLLER ASSEMBLY, EL, 220 V	83 006 81
		CONTROLLER ASSEMBLY, LCD, 100 V	83 006 90
14	TABLE 6.9	SHELL ASSEMBLY	83 100 70

Change 2

TABLE 6.1: INCUBATOR HOOD/SHELL ASSEMBLY, PARTS LIST

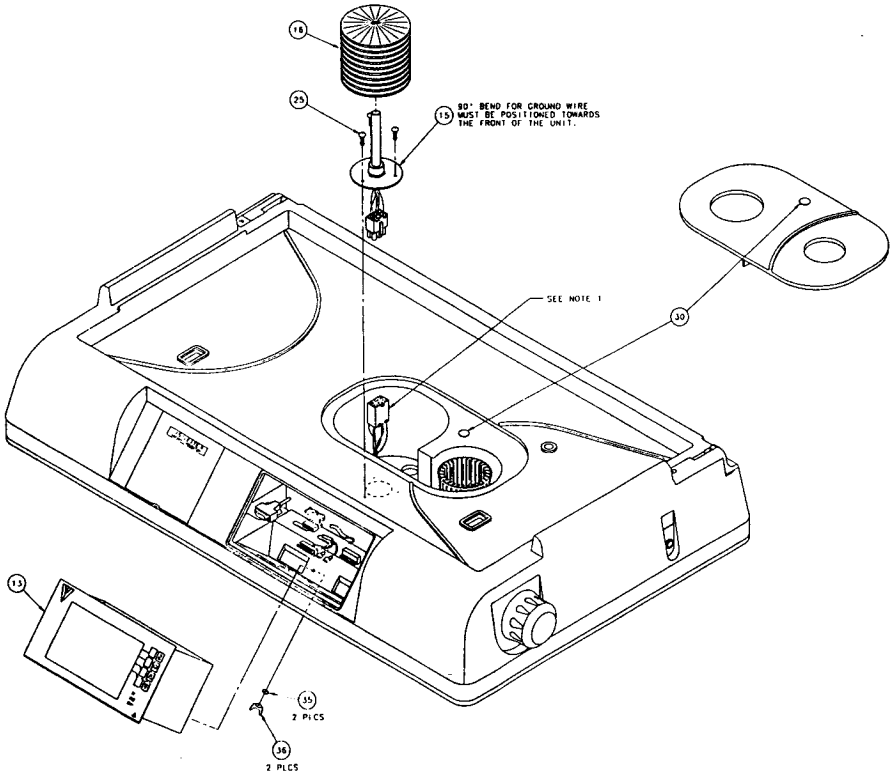
(Sheet 2 of 2)

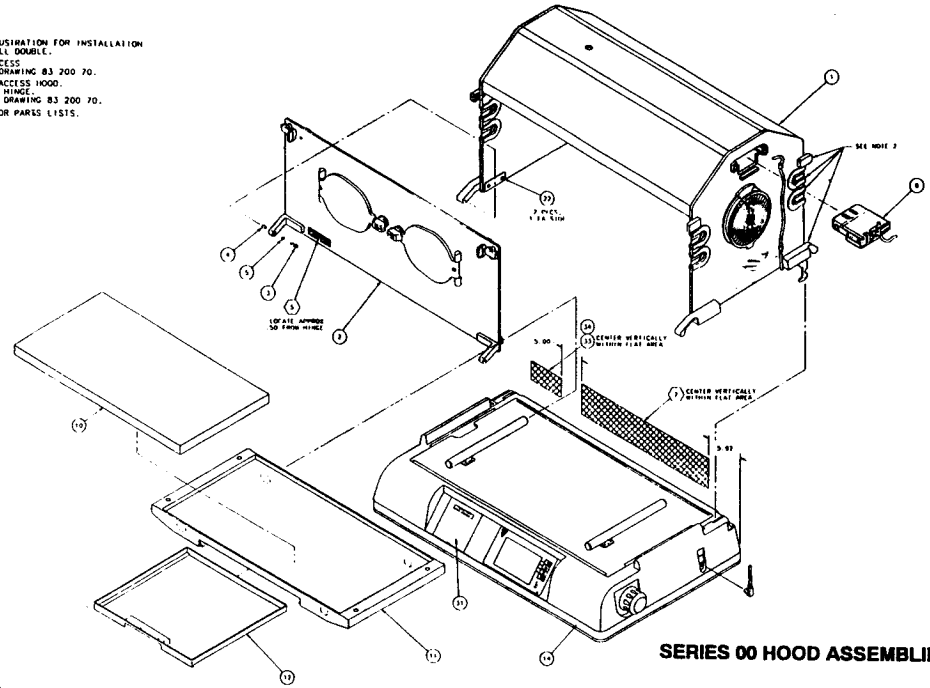
ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
15		HEATER ASSEMBLY 120 V	83 101 70
		HEATER ASSEMBLY, 240 V	83 101 80
		HEATER ASSEMBLY, 100 V	83 101 90
16		RADIATOR, HEATER, CASTING	83 100 30
17 THRU 20		NOT USED	
21		BABY TEMPERATURE PROBE, REUSABLE	83 102 10
22		SCREW COVER, LT GRAY 1/ -20 PEN	67 502 50
23 and 24		NOT USED	
25		SCR, 6-32x9/16 TR PH SS NYLOK	99 024 19
26 thru 29		NOT USED	
30		LABEL, HOT SURFACE	83 500 38
31		OVERLAY, HUMIDITY PANEL	83 500 05
35		FLAT WASHER, 0.20 ID , 0.50 OD 0.04T	99 122 54
36		WING NUT, 6 - 32 , SS	99 105 06
		LABEL LIST- ALL ITEMS IN FIGURE 6.1, ENCLOSED IN ⬡	
2		REAR WARNINGS LABEL ENGLISH	83 500 50
		REAR WARNINGS LABEL SPANISH	83 500 51
		REAR WARNINGS LABEL FRENCH	83 500 52
		REAR WARNINGS LABEL GERMAN	83 500 53
		REAR WARNINGS LABEL ITALIAN	83 500 54

Change 2

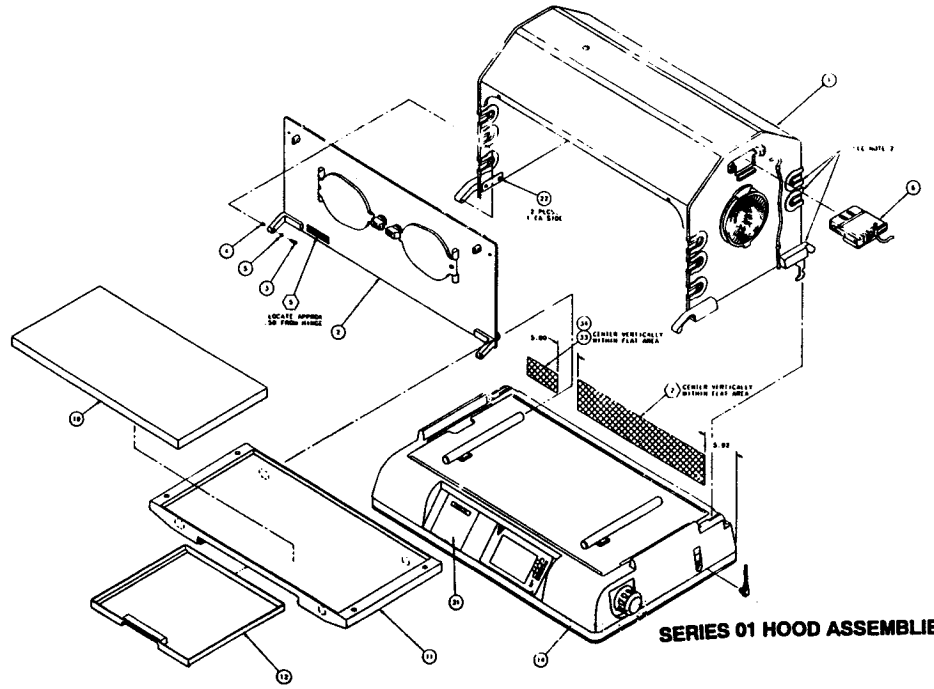
NOTES:
1. WHEN INSTALLING REAR ACCESS PANEL FOLLOW THE ILLUSTRATION FOR INSTALLATION OF THE FRONT ACCESS PANEL. MOUNTING HARDWARE WILL DOUBLE.
2. THESE ITEMS ARE ONLY SHOWN WHEN REAR OPTIONAL ACCESS IS ORDERED. INSTALLATION OF THESE PARTS IS PER DRAWING 83 200 70.
3. REAR HINGE BLOCK WILL BE DIFFERENT FOR A SINGLE ACCESS HOOD. SEE DRAWING 83 200 71 FOR PROPER ILLUSTRATION OF HINGE. SHOWN IS THE HINGING FOR A DUAL ACCESS HOOD. SEE DRAWING 83 200 70.
4. ITEM NUMBERS IN HEXAGONS () ARE ON 83 XXX INCUBATOR PARTS LISTS.

NOTES:
1. CONNECTOR (11,20) LOCATED IN SHELL ASSEMBLY (83 100 70).
2. DECK, SCROLLER COVER, AND LIFT BARS REMOVED FOR INSTALLATION OF HEATER.
3. ~~PLACE SCREWS (17,6 IN20,21PSEAC BAG 11,12 AND PLACE OF MATTRESS.~~
4. PLACE PROBE (17,21 ON MATTRESS.





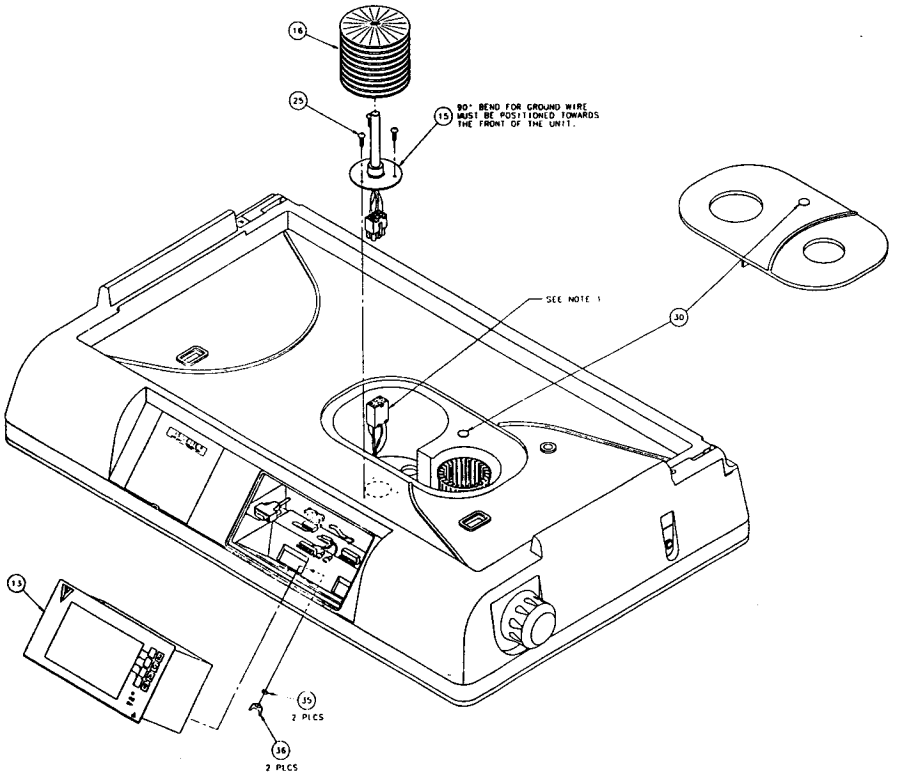
SERIES 00 HOOD ASSEMBLIES



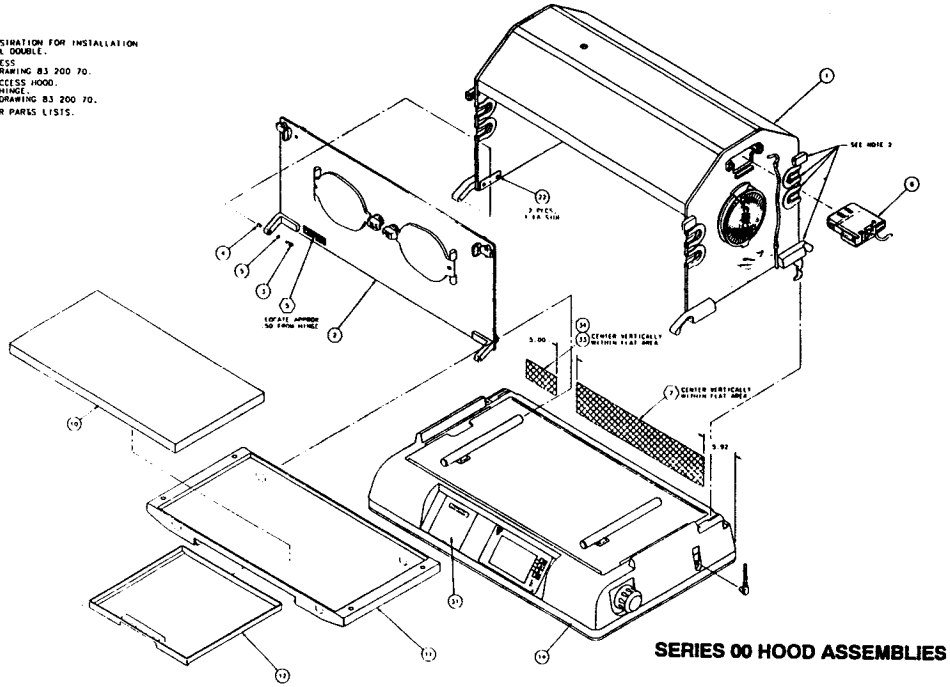
SERIES 01 HOOD ASSEMBLIES

FIGURE 6.1: PARTS LOCATION DIAGRAM, INCUBATOR HOOD/SHELL ASSEMBLY

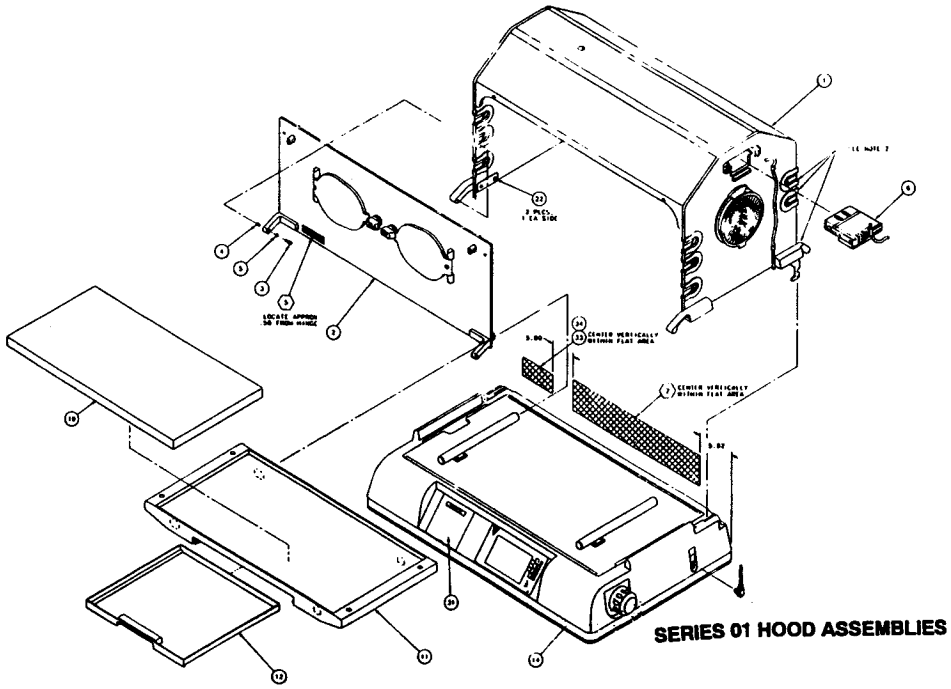
NOTES:
1. CONNECTOR (17,20) LOCATED IN SHELL ASSEMBLY (83 100 70).
2. DECK, SCROLLER COVER AND LIFT BARS REMOVED FOR INSTALLATION OF HEATER.
3. ~~PLACE SCREWS (17,26) INTO ZIPSTAC BAG (17,27) AND PLACE ON MATTRESS.~~
4. PLACE PROBE (17,21) ON MATTRESS.



NOTES:
1. WHEN INSTALLING REAR ACCESS PANEL FOLLOW THE ILLUSTRATION FOR INSTALLATION OF THE FRONT ACCESS PANEL. MOUNTING HARDWARE WILL DOUBLE.
2. THESE ITEMS ARE ONLY SHOWN WHEN REAR OPTIONAL ACCESS IS ORDERED. INSTALLATION OF THESE PARTS IS PER DRAWING 83 200 70.
3. REAR HINGE BLOCK WILL BE DIFFERENT FOR A SINGLE ACCESS HOOD. SEE DRAWING 83 200 71 FOR PROPER ILLUSTRATION OF HINGE. SHOWN IS THE HINGING FOR A DUAL ACCESS HOOD. SEE DRAWING 83 200 70.
4. ITEM NUMBERS IN HEXAGONS ⬡ ARE ON 83 XXX INCUBATOR PARTS LISTS.



SERIES 00 HOOD ASSEMBLIES



SERIES 01 HOOD ASSEMBLIES

FIGURE 6.1: PARTS LOCATION DIAGRAM, INCUBATOR HOOD/SHELL ASSEMBLY

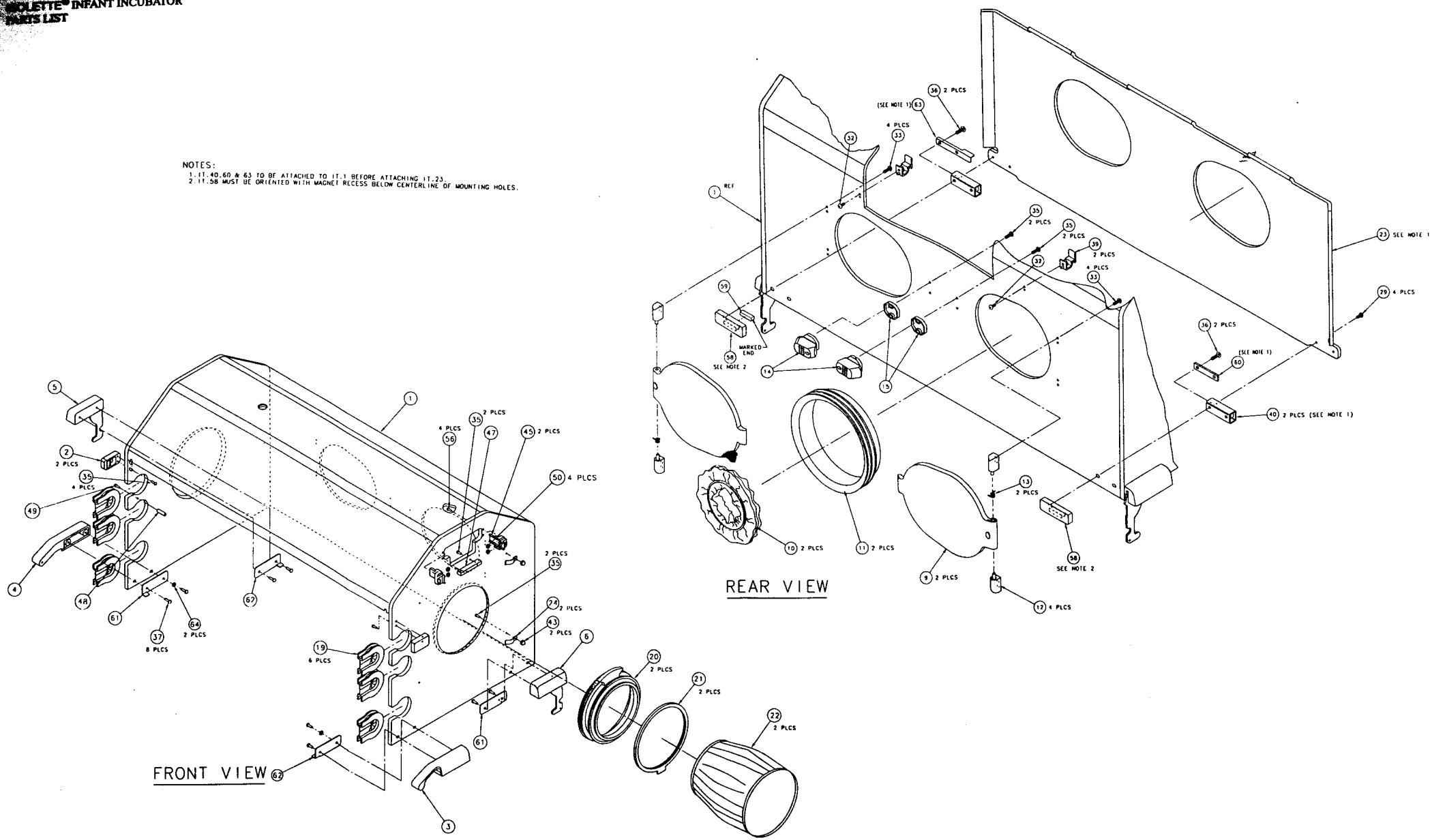


FIGURE 6.3: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP SERIES 00

TABLE 6.2: HOOD ASSEMBLY, HI, DUAL ACCESS, 2IP, SERIES 00 PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 2IP	83 200 70
1		HOOD, DUAL ACCESS, 2IP, HIGH	83 200 00
2		KEEPER, ACCESS PANEL LATCH	83 200 15
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 20		NOT USED	
11		GROMMET, ACCESS	83 200 20
12		RING ASSEMBLY, IRIS PORT, LG FLANGE	68 120 76
13		RETAINING RING, IRIS PORT, CLEAR	68 120 32
14		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
15		STANDOFF, 6-32 ID 0.38 OD .044 L	68 200 24
16		CLAMP CABLE, SPR TY NYL 0.38 ID	81 020 20
17 THRU 19		NOT USED	
20		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22 THRU 24		NOT USED	
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26 THRU 29		NOT USED	
30		SLIDE ASSEMBLY SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33 THRU 39		NOT USED	
40		NUT, HEX, 6 - 32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52
42		NUT, ACORN, 6 - 32 AL	99 105 20
61		PLATE, BACKUP, HINGE LF & RR	83 200 18
62		PLATE, BACKUP, HINGE, LR & RF	83 200 19
64		BASE SCREW, 1/4 - 20 PN	67 502 51

Change 2

FIGU

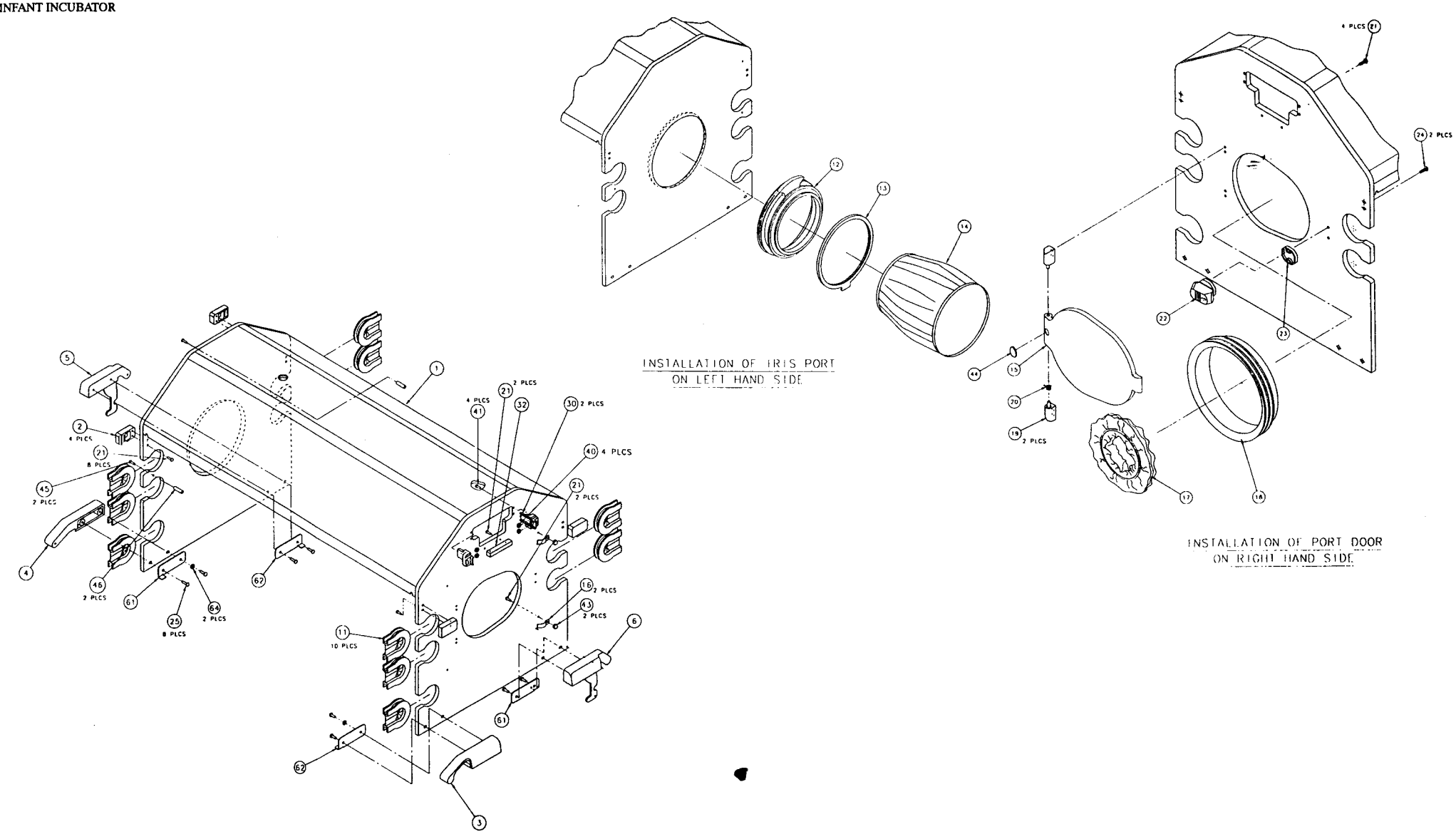


FIGURE 6.4: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 1AD, 1IP SERIES 00

Change 2

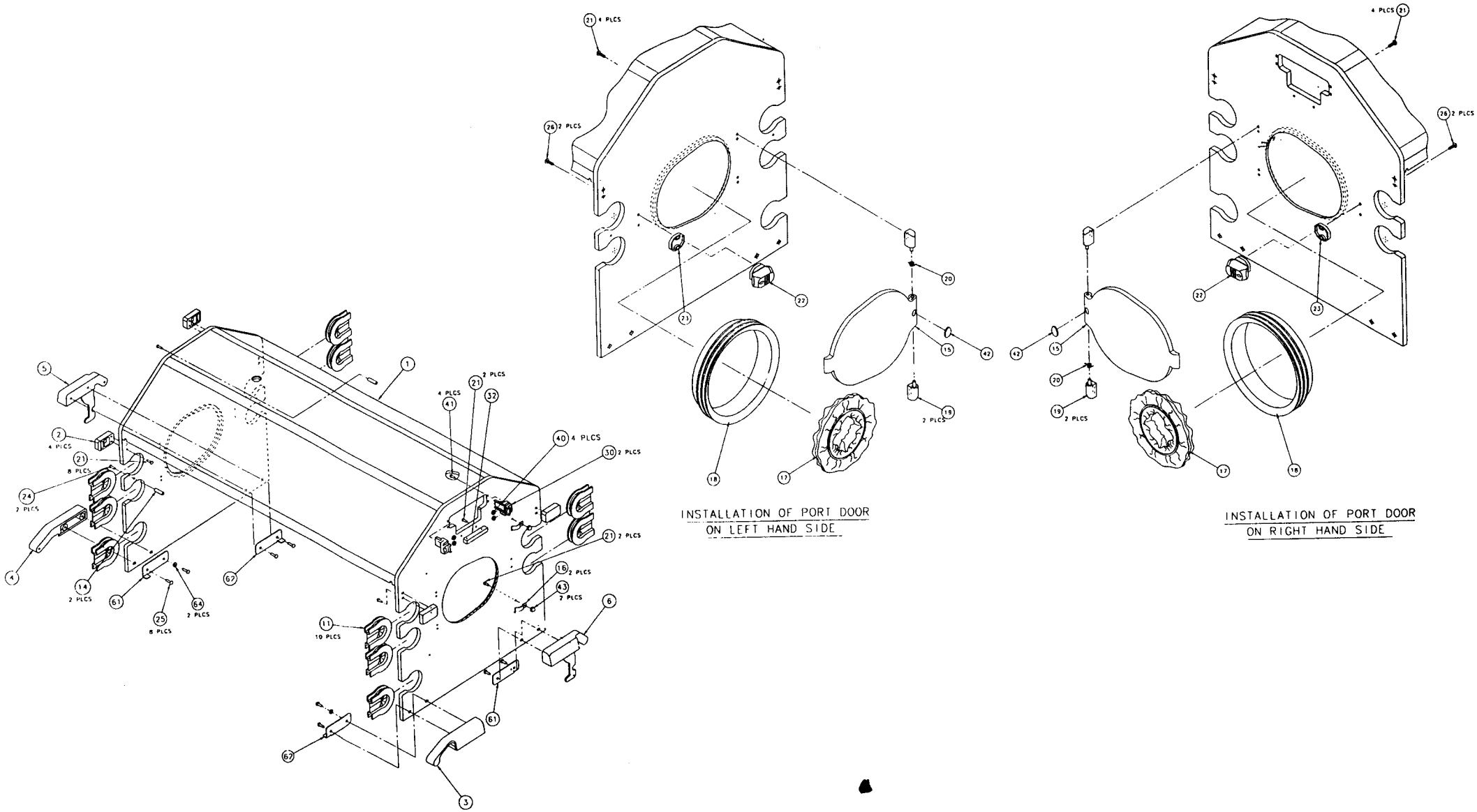


FIGURE 6.5: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD SERIES 00

Change 2

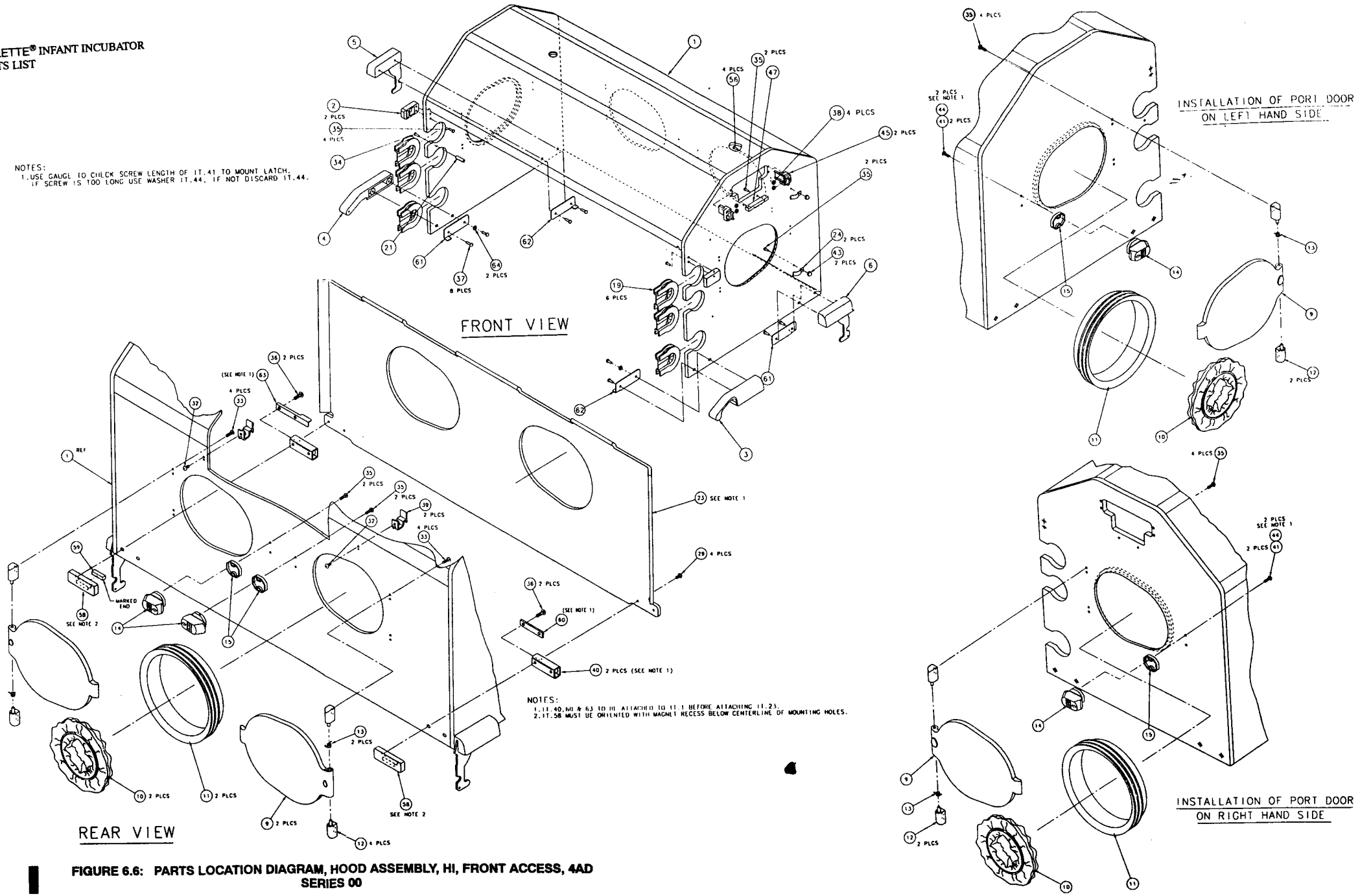

NOTES:
1.USE GAUGE TO CHECK SCREW LENGTH OF IT.41 TO MOUNT LATCH.
IF SCREW IS TOO LONG USE WASHER IT.44. IF NOT DISCARD IT.44.
FRONT VIEW
REAR VIEW
NOTES:
1.IT.40,NO.# 63 TO BE ATTACHED TO IT.1 BEFORE ATTACHING IT.23.
2.IT.58 MUST BE ORIENTED WITH MAGNET RECESS BELOW CENTERLINE OF MOUNTING HOLES.
INSTALLATION OF PORT DOOR
ON LEFT HAND SIDE
INSTALLATION OF PORT DOOR
ON RIGHT HAND SIDE

FIGURE 6.6: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD SERIES 00

Change 2

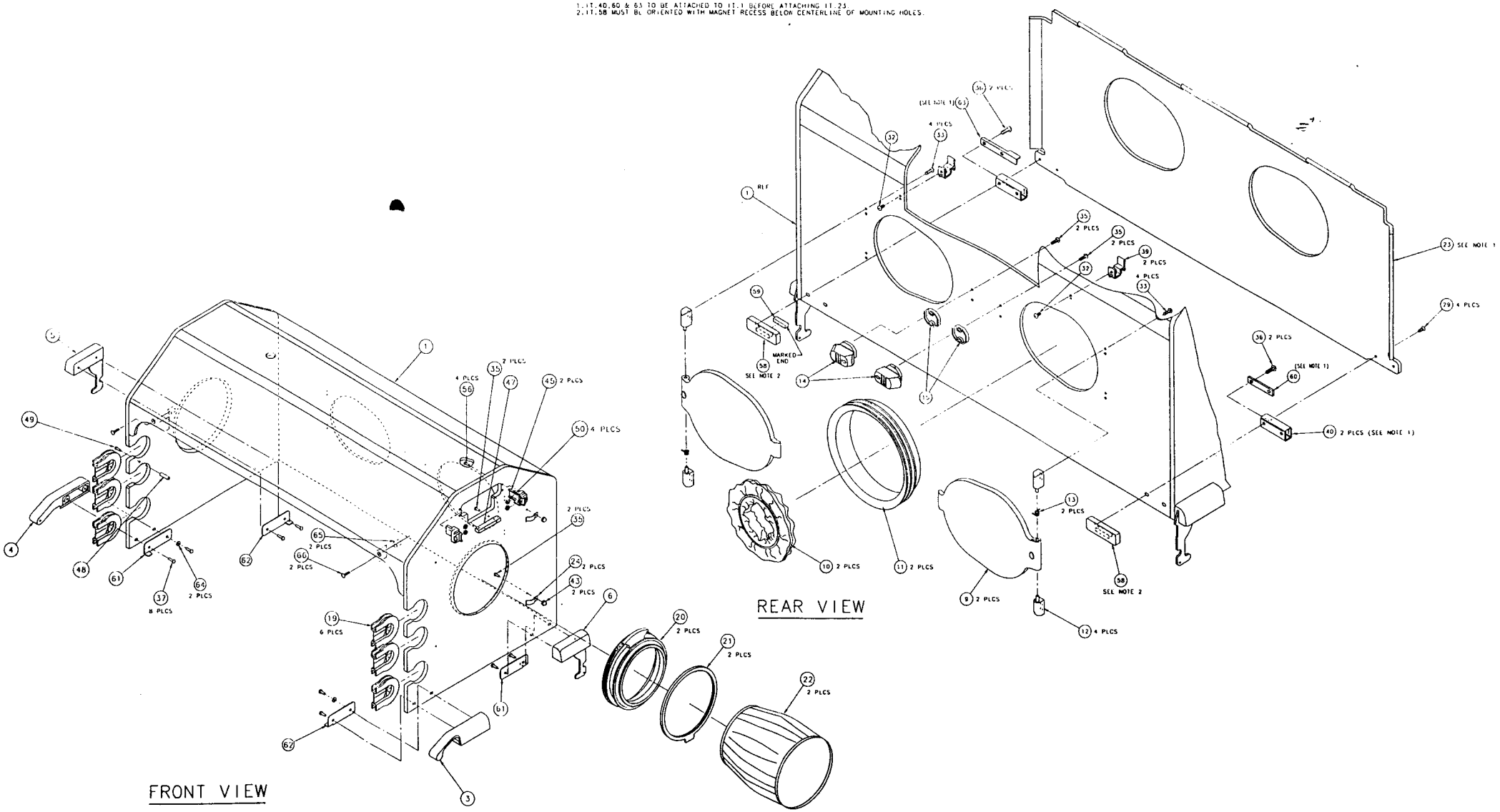


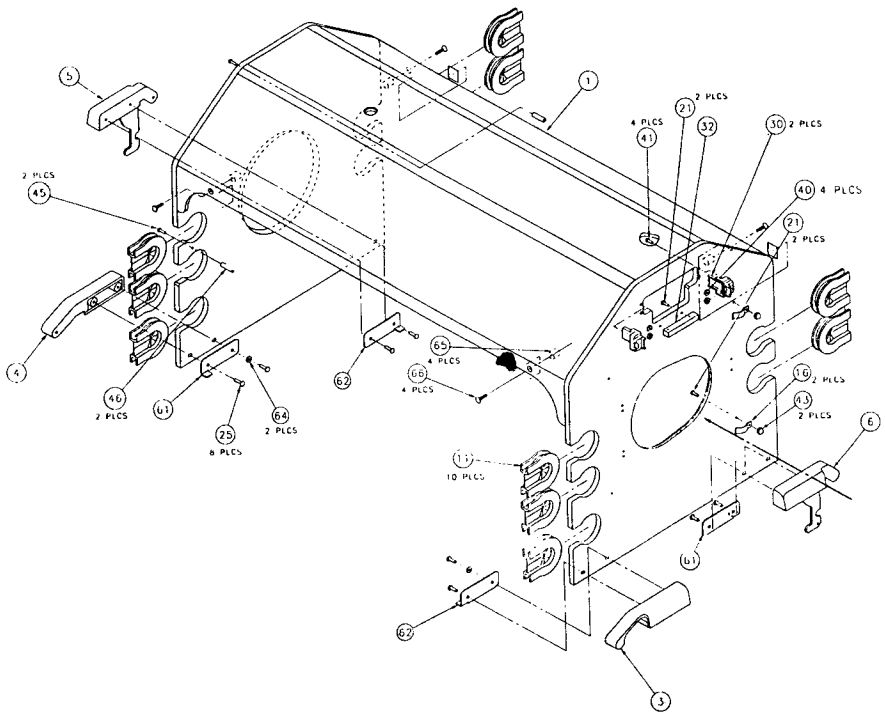
FIGURE 6.10: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP SERIES 01

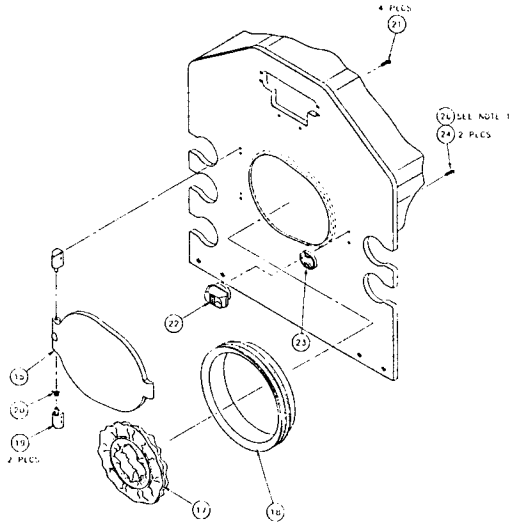
TABLE 6.9: HOOD ASSEMBLY, HI, DUAL ACCESS, 2IP, SERIES 01 PARTS LIST

(Sheet 1 of 1)

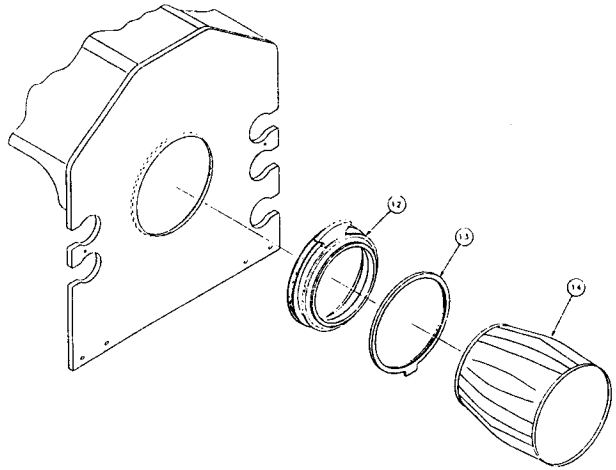
ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 2IP	83 200 77
1		HOOD, DUAL ACCESS, 2IP, HIGH	83 200 00
2		NOT USED	
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 20		NOT USED	
11		GROMMET, ACCESS	83 200 20
12		RING ASSEMBLY, IRIS PORT, LG FLANGE	68 120 76
13		RETAINING RING, IRIS PORT, CLEAR	68 120 32
14		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
15		STANDOFF, 6-32 ID 0.38 OD .044 L	68 200 24
16		CLAMP CABLE, SPR TY NYL 0.38 ID	81 020 20
17 THRU 19		NOT USED	
20		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22 THRU 24		NOT USED	
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26 THRU 29		NOT USED	
30		SLIDE ASSEMBLY SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33 THRU 39		NOT USED	
40		NUT, HEX, 6 - 32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52
42		NUT, ACORN, 6 - 32 AL	99 105 20
61		PLATE, BACKUP, HINGE LF & RR	83 200 18
62		PLATE, BACKUP, HINGE, LR & RF	83 200 19
64		BASE SCREW, 1/4 - 20 PN	67 502 51
65		SPACER, 6 - 32 , 0.31 OD X 0.38 LG	83 300 56
66		SCREW, 6 - 32 X 7/16 FL PH SS	99 023 58
67		NOT USED	

Change 2





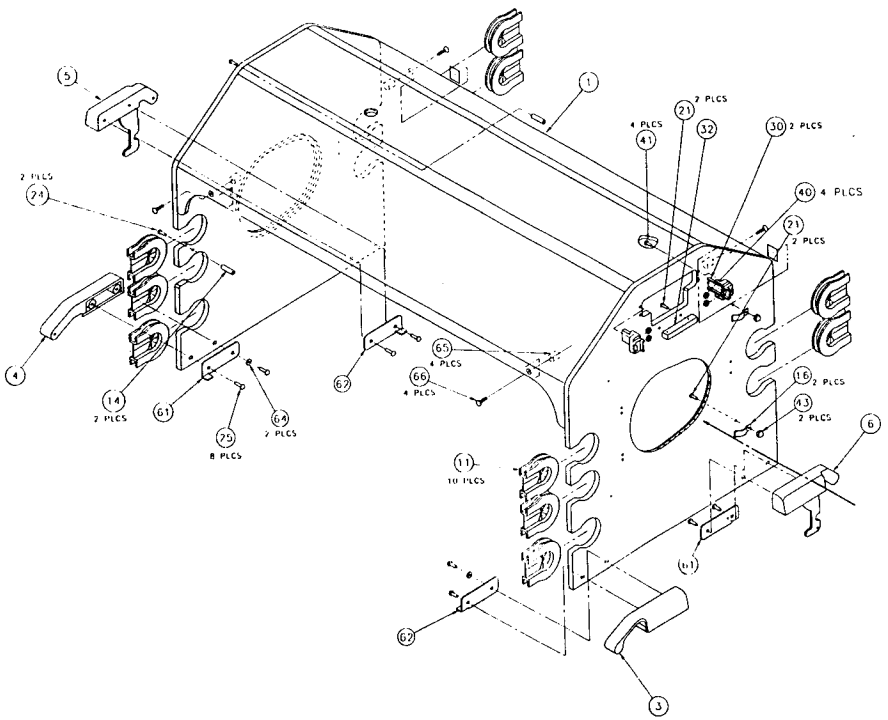
INSTALLATION OF PORT DOOR
ON RIGHT HAND SIDE

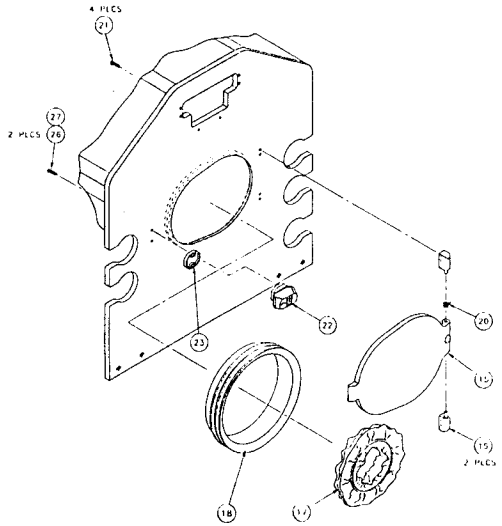


INSTALLATION OF IRIS PORT
ON LEFT HAND SIDE

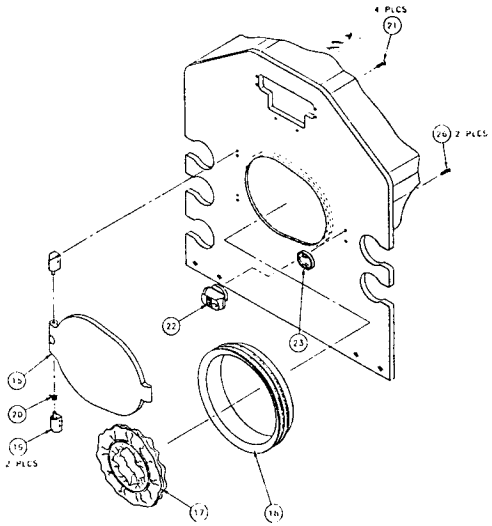
FIGURE 6.11: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 1AD, 1IP SERIES 01

Change 2





INSTALLATION OF PORT DOOR
ON LEFT HAND SIDE



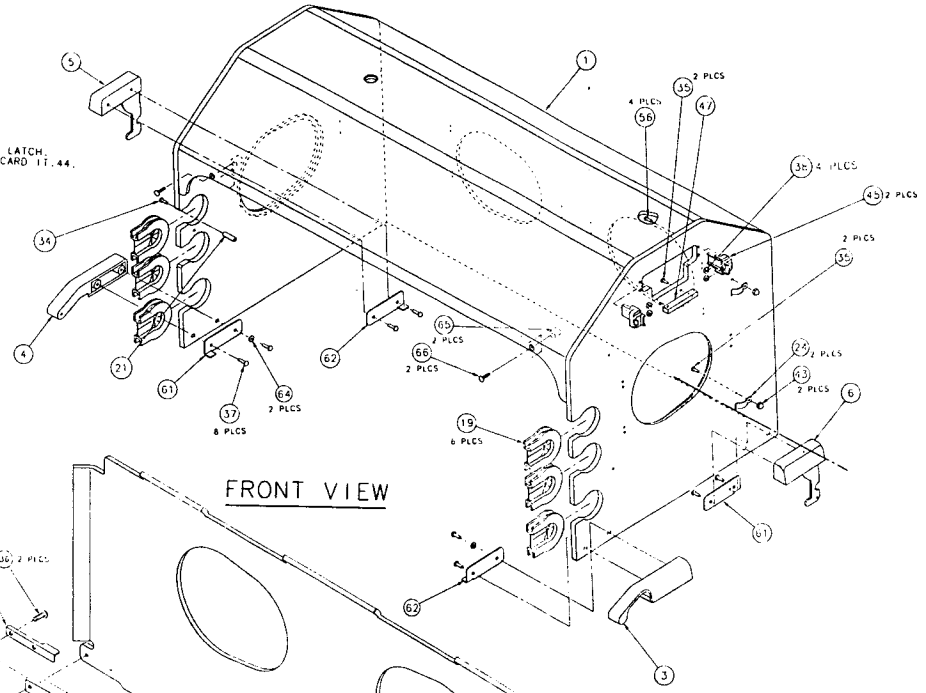
INSTALLATION OF PORT DOOR
ON RIGHT HAND SIDE

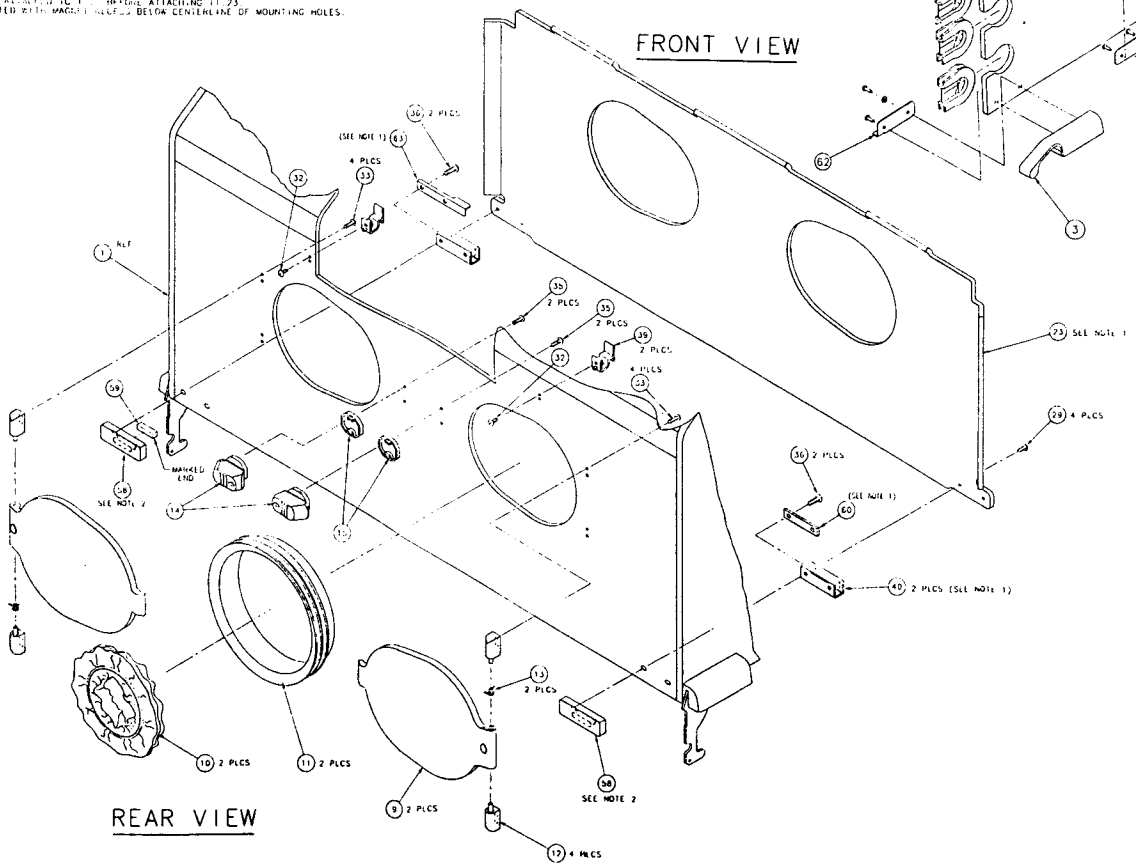
FIGURE 6.12: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD SERIES 01

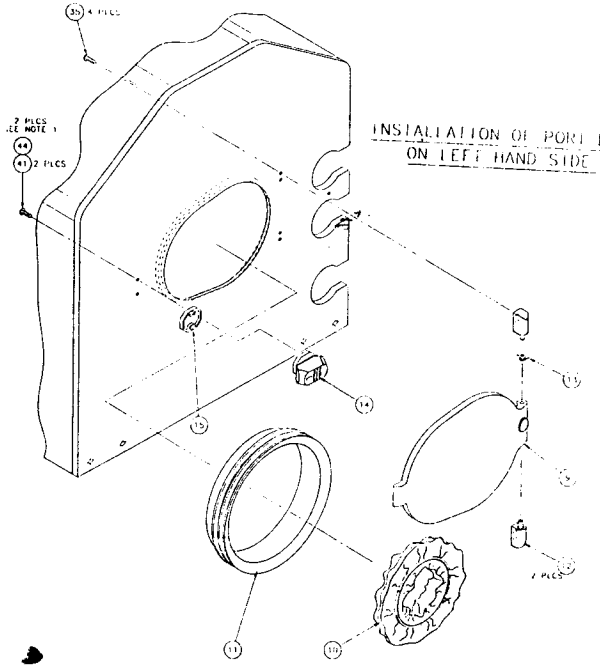
Change 2

NOTES:
1. USE GAUGE TO CHECK SCREW LENGTH OF IT.41 TO MOUNT LATCH. IF SCREW IS TOO LONG USE WASHER IT.44. IF NOT DISCARD IT.44.

NOTES:
1. IT.40,60 & 63 TO BE ATTACHED TO [illegible] BEFORE ATTACHING IT.23.
2. IT.58 MUST BE ORIENTED WITH MAGNET RECESS BELOW CENTERLINE OF MOUNTING HOLES.







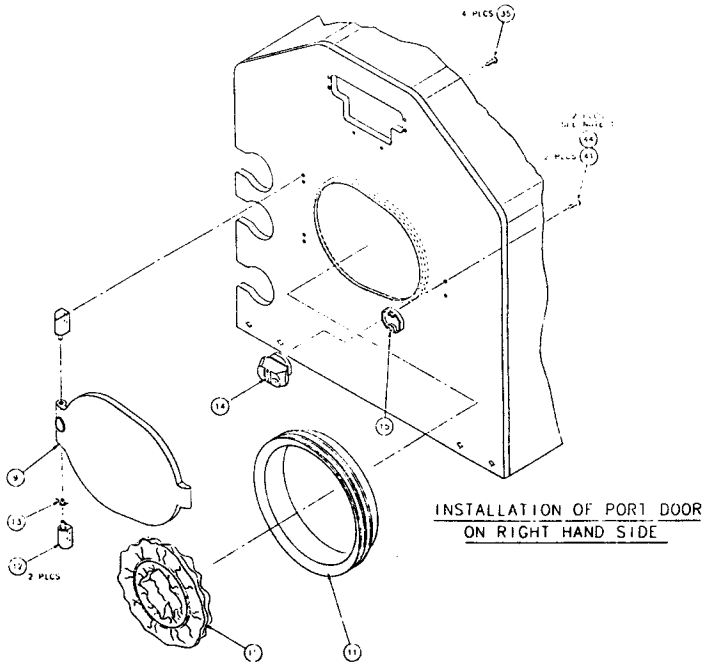
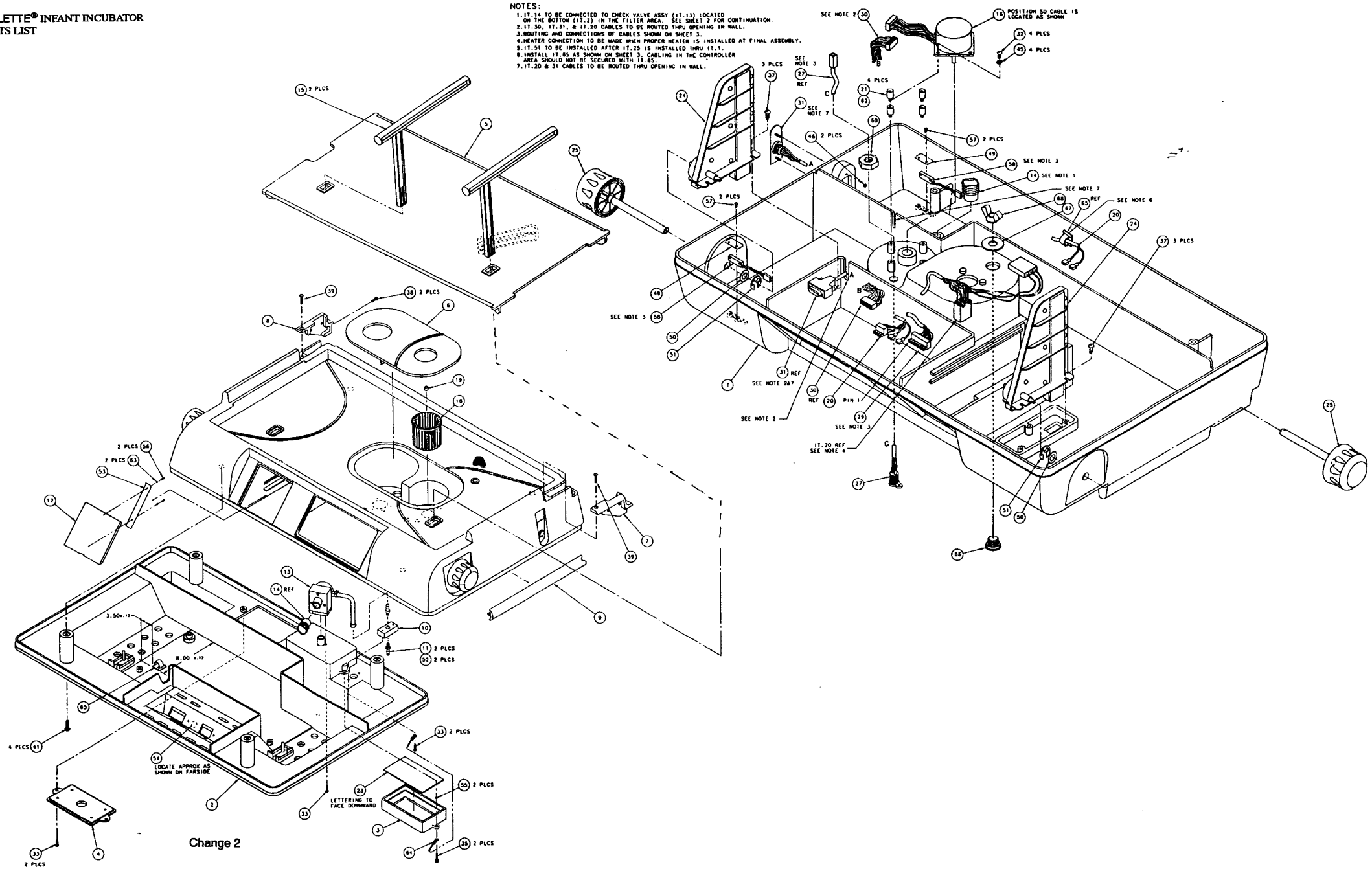


FIGURE 6.13: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD SERIES 01


NOTES:
1. IT.14 TO BE CONNECTED TO CHECK VALVE ASSY (IT.13) LOCATED ON THE BOTTOM (IT.2) IN THE FILTER AREA. SEE SHEET 2 FOR CONTINUATION.
2. IT.30, IT.31, & IT.20 CABLES TO BE ROUTED THRU OPENING IN WALL.
3. ROUTING AND CONNECTIONS OF CABLES SHOWN ON SHEET 3.
4. HEATER CONNECTION TO BE MADE WHEN PROPER HEATER IS INSTALLED AT FINAL ASSEMBLY.
5. IT.51 TO BE INSTALLED AFTER IT.25 IS INSTALLED THRU IT.1.
6. INSTALL IT.65 AS SHOWN ON SHEET 3. CABLING IN THE CONTROLLER AREA SHOULD NOT BE SECURED WITH IT.65.
7. IT.20 & 31 CABLES TO BE ROUTED THRU OPENING IN WALL.
SEE NOTE 2
POSITION SD CABLE IS LOCATED AS SHOWN
4 PLCS
3 PLCS
SEE NOTE 3
REF
SEE NOTE 7
2 PLCS
SEE NOTE 1
SEE NOTE 6
PIN 1
IT.20 REF
SEE NOTE 4
SEE NOTE 2a?
LOCATE APPROX AS SHOWN ON FARSIDE
LETTERING TO FACE DOWNWARD

Change 2

FIGURE 6.16: PARTS LOCATION DIAGRAM, SHELL ASSEMBLY

TABLE 6.15: ACCESS PANEL REAR ASSEMBLY, SERIES 01 PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		ACCESS PANEL REAR ASSEMBLY	83 300 77
1		PANEL, ACCESS, HIGH	83 300 00
2		DOOR, ACCESS	83 300 05
3		CUFF, ACCESS DOOR	83 300 06
4		GASKET, ACCESS DOOR	83 300 07
5		PIVOT HINGE, ACCESS DOOR	83 300 08
6		SPRING, TRSN, .27OD .030W .365LG	68 510 10
7		ACCESS DOOR LATCH ASSY *	83 300 65
8		LATCH MOUNT, ACCESS DOOR*	83 300 15
9 thru 16		NOT USED	
17		MAGNET, .25SQ 1.00LG CSTALNICO	83 300 33
18		HINGE, ACCESS PNL, LEFT, REAR	83 300 35
19		HINGE, ACCESS PNL, RIGHT, REAR	83 300 36
20		LATCH, HEAT SHIELD	83 300 09
21		HINGE, HEAT SHIELD	83 300 10
22		HEAT SHIELD, ACCESS PNL, HI	83 001 10
23 THRU 27		NOT USED	
28		SCR, 6-32X3/8 TR PH SS NYLOK	99 023 51
29		SCR, SLFTPG, 8 X 3/8 TR PH SS 60-1	99 088 67
30		SCR, 6-32X7/16 TR PH SS NYLOK	99 023 64
31 AND 32		NOT USED	
33		SCR, 6 - 32 X 9/16 TR PH SS NYLOK	99 024 19
34		NOT USED	
35		SCR, 10 - 32 X 5/8 TR PH SS NYLOK	99 042 66
36		BACKUP PLATE, HEAT SHIELD HINGE	83 300 04
37		HEAT SHIELD BRACKET, REAR	83 300 13
38		SPACER, 6 - 32 ID 0.31 OD 0.50L	83 300 57
39		SCREW, 6 - 32 X 7/16 TR PH SS	99 023 63
40 THRU 44		PAWL LATCH REPLACEMENT KIT	83 900 44

*OREDER ACCESS PANEL LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

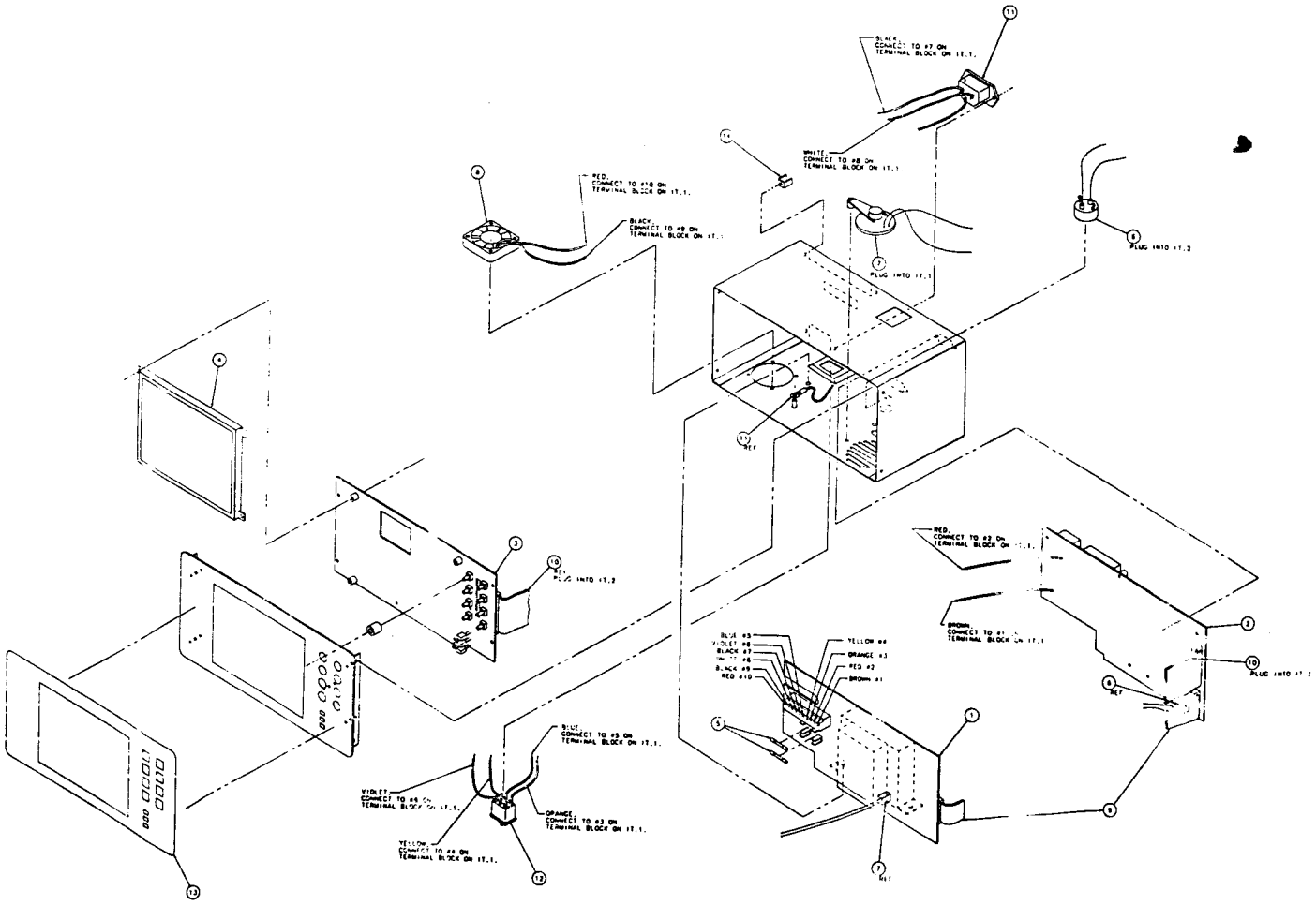


FIGURE 6.17: PARTS LOCATION DIAGRAM, CONTROLLER ASSEMBLY (SHEET 1 OF 1)

Change 2

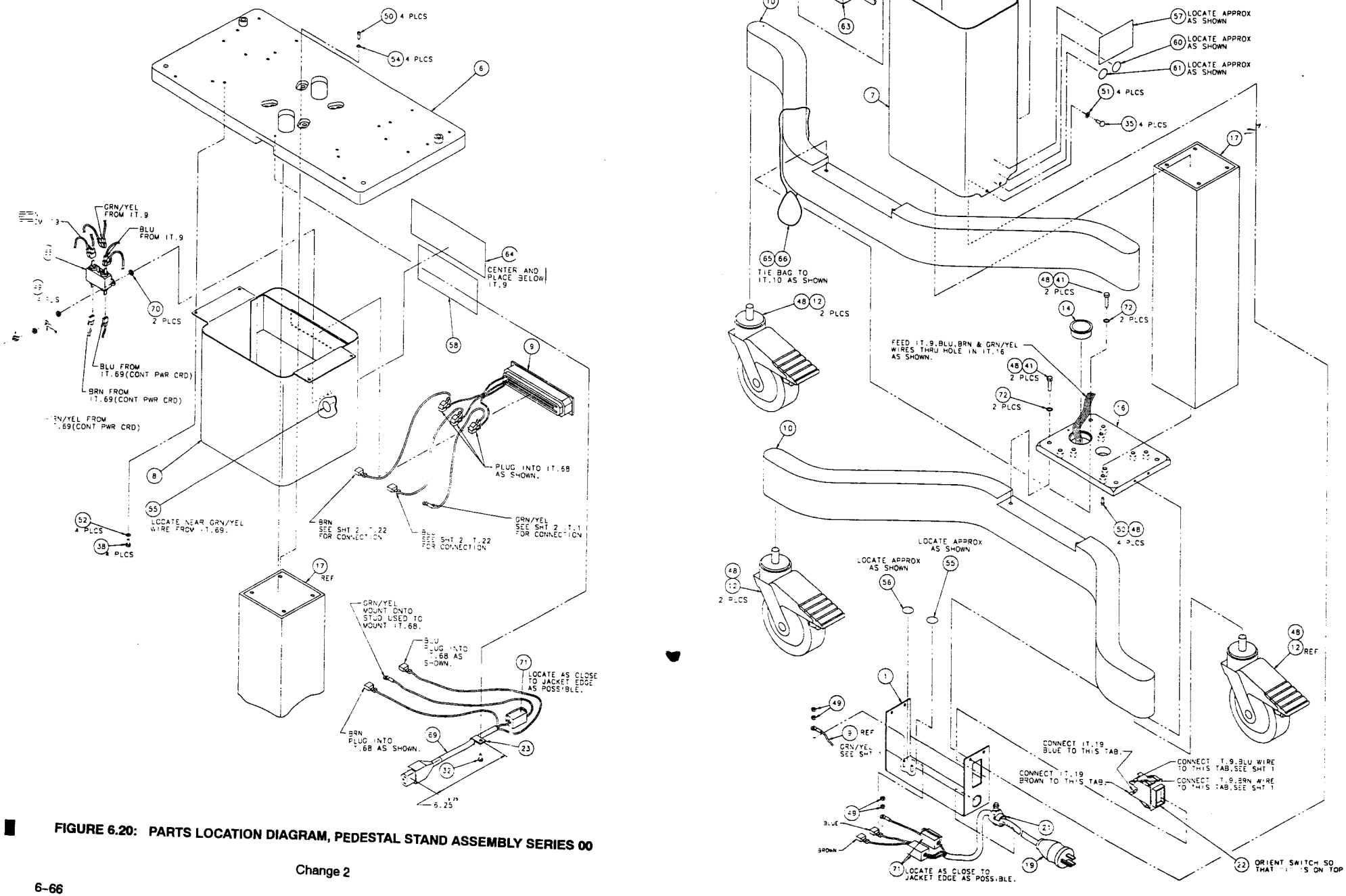


FIGURE 6.20: PARTS LOCATION DIAGRAM, PEDESTAL STAND ASSEMBLY SERIES 00

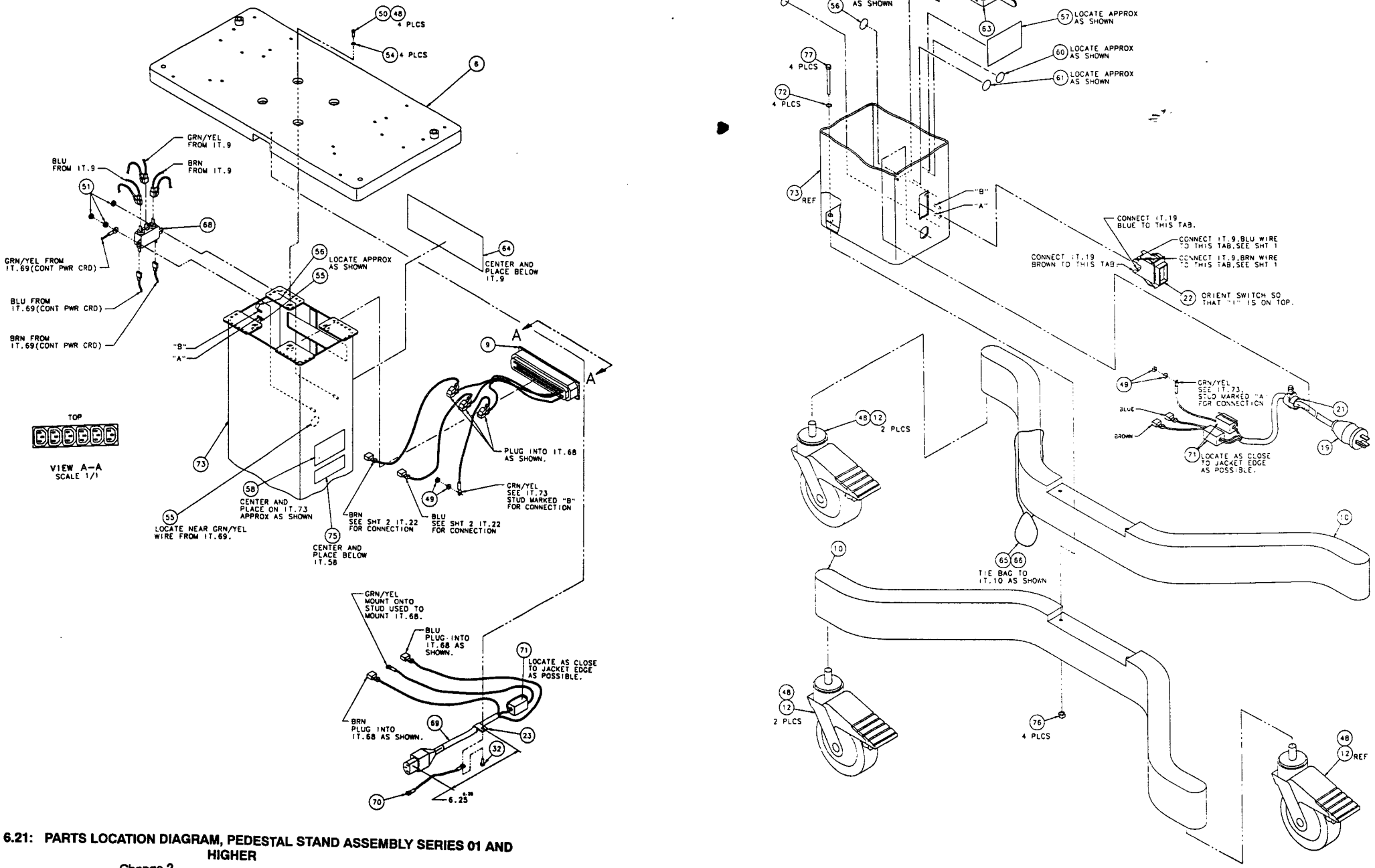


FIGURE 6.21: PARTS LOCATION DIAGRAM, PEDESTAL STAND ASSEMBLY SERIES 01 AND HIGHER

Change 2

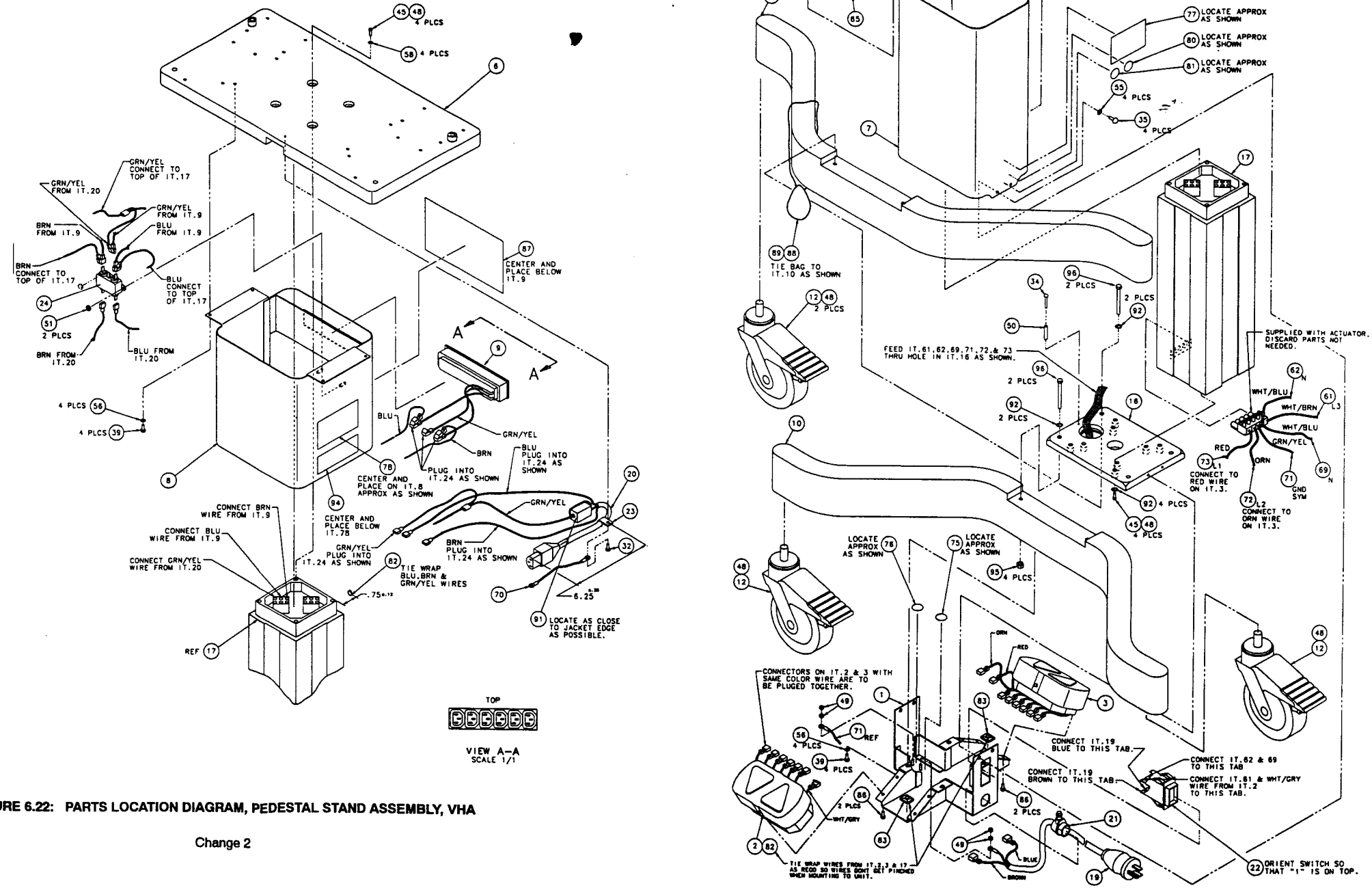
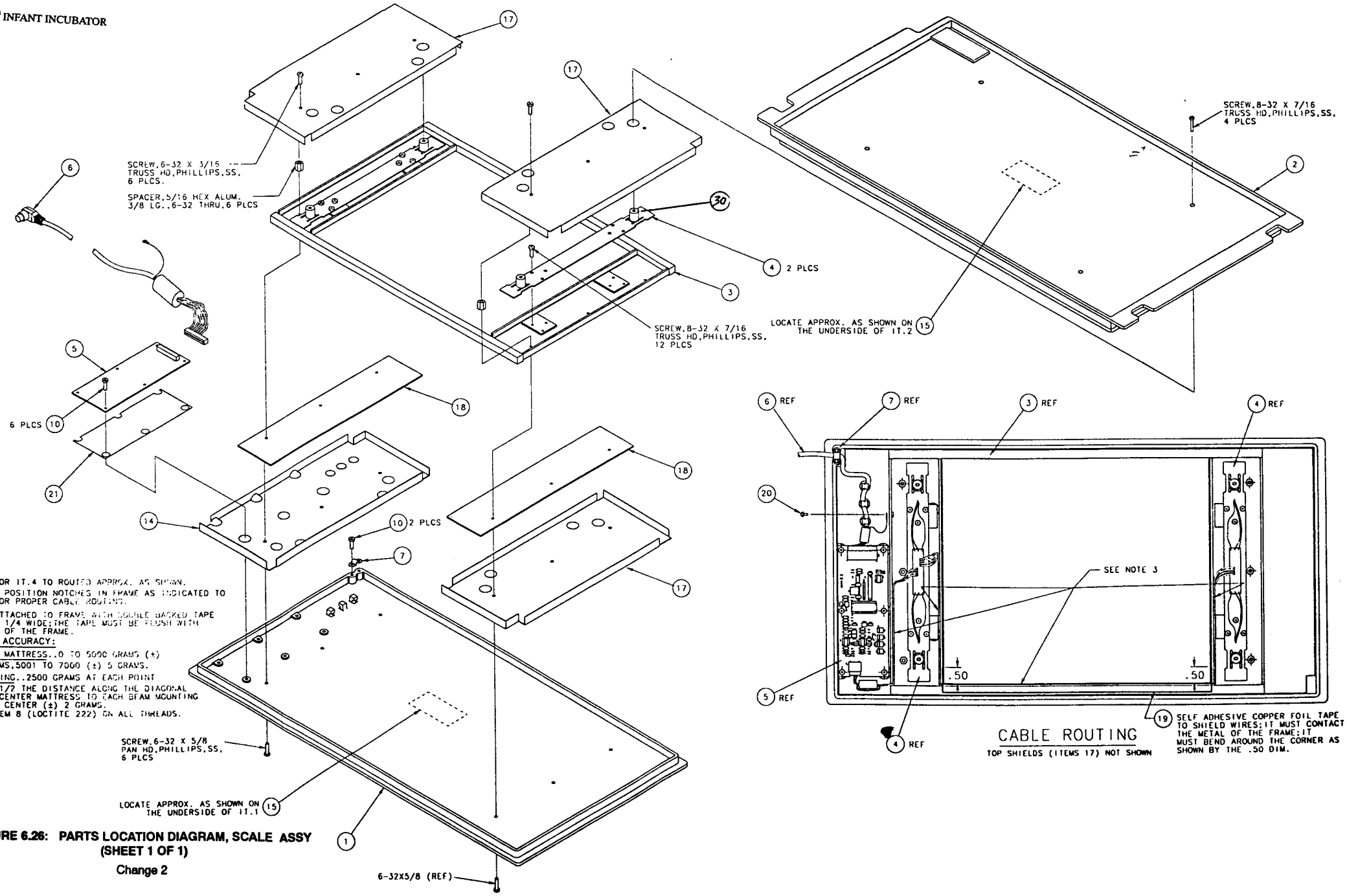


FIGURE 6.22: PARTS LOCATION DIAGRAM, PEDESTAL STAND ASSEMBLY, VHA

Change 2


SCREW,6-32 X 3/16 TRUSS HD,PHILLIPS,SS, 6 PLCS.
SPACER,5/16 HEX ALUM, 3/8 LG.,6-32 THRU,6 PLCS
SCREW,8-32 X 7/16 TRUSS HD,PHILLIPS,SS, 12 PLCS
4 2 PLCS
6 PLCS 10
10 2 PLCS
SCREW,6-32 X 5/8 PAN HD,PHILLIPS,SS, 6 PLCS
LOCATE APPROX. AS SHOWN ON THE UNDERSIDE OF IT.1
6-32X5/8 (REF)
SCREW,8-32 X 7/16 TRUSS HD,PHILLIPS,SS, 4 PLCS
LOCATE APPROX. AS SHOWN ON THE UNDERSIDE OF IT.2
6 REF
7 REF
3 REF
4 REF
5 REF
4 REF
SEE NOTE 3
.50
.50
19 SELF ADHESIVE COPPER FOIL TAPE TO SHIELD WIRES;IT MUST CONTACT THE METAL OF THE FRAME;IT MUST BEND AROUND THE CORNER AS SHOWN BY THE .50 DIM.
CABLE ROUTING
TOP SHIELDS (ITEMS 17) NOT SHOWN

NOTES:

1. CABLE FOR IT.4 TO ROUTED APPROX. AS SHOWN.
2. ITEM 3; POSITION NOTCHES IN FRAME AS INDICATED TO ALLOW FOR PROPER CABLE ROUTING.
3. WIRES ATTACHED TO FRAME WITH DOUBLE BACKED TAPE 3M#4032 1/4 WIDE;THE TAPE MUST BE FLUSH WITH THE TOP OF THE FRAME.
4. SCALE ACCURACY:
   CENTER MATTRESS..0 TO 5000 GRAMS (±) 2 GRAMS,5001 TO 7000 (±) 5 GRAMS.
   CORNERING..2500 GRAMS AT EACH POINT (4), 1/2 THE DISTANCE ALONG THE DIAGONAL FROM CENTER MATTRESS TO EACH BEAM MOUNTING SCREW CENTER (±) 2 GRAMS.
5. USE ITEM 8 (LOCTITE 222) ON ALL THREADS.

FIGURE 6.26: PARTS LOCATION DIAGRAM, SCALE ASSY (SHEET 1 OF 1)

Change 2

TABLE 6.25: CHECK VALVE ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		CHECK VALVE ASSEMBLY	83 120 71
1.		BODY ASSEMBLY	83 120 21
2.		BODY GASKET	83 120 16
3.		BASE	83 120 10
4.		PISTON	83 120 13
5.		COMPRESSION SPRING	83 120 12
6.		DIAPHRAGM	68 130 57
7.		FILTER DISC	12 360 00
8.		HOSE CLAMP	83 620 64
9.		CLEAR BRAIDED HOSE	83 620 68
10.		CHECK VALVE, 1/4 NPT F IN, M OUT	78 467 16
11.		COUPLING, 1/4 HOSE - 1/4 NPT BRASS	07 023 00
12.		90 DEGREE STREET ELBOW, 1/4 NPT BRS	67 355 30
13.		RETAINING RING	99 182 82
14.		PISTON SEAL	83 120 14
15.		SCREW, 6 - 32 X 1.75 OV PH SS	99 026 18
16.		FLAT WASHER, 0.628 ID, 0.88 OD 0.06T ACTL	68 139 51
17.		BARB CONNECTOR, 1/4 HOSE X 1/8 NPT (M)	01 017 00
18.		LOCTITE #222	AR
19.		WAL RETAINING RING 5105-6255	99 182 93
20.		TEFLON TAPE	AR
21.		1/4 ID HOSE PLUG, 1.0 LG DELRIN	82 120 06

Change 2

TABLE 6.29: HIGH/LOW MONITOR SHELF, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
.....		HIGH/LOW MONITOR SHELF	83 442 00
1.		MONITOR SHELF SUPPORT ARM	83 442 01
2		26 INCH MONITOR SHELF POLE	83 442 04
3.		8.6 INCH MONITOR SHELF POLE	83 442 05
5.		MONITOR SHELF SUBASSEMBLY	83 442 20
10.		LOCTITE, NO. 271-05	AR
11.		SCREW, 10 - 32 X 1.75 CP HX SS NYLOK	99 044 66
12.		LOCK WASHER, EXT # 10 SS (QTY 2)	99 123 94
17.		SCREW, 5/16 - 18 X 1.38 CP HX S ZI	99 064 93
18.		LOCK WASHER, SP 5/16 S CA	99 126 32
19		SCREW, 1/4 - 20 X 2.00 FL PH SS NY	99 059 43
20		WASHER, 6.5 X 0.57 X 0.09 , POLYETH	83 442 21

Change 2

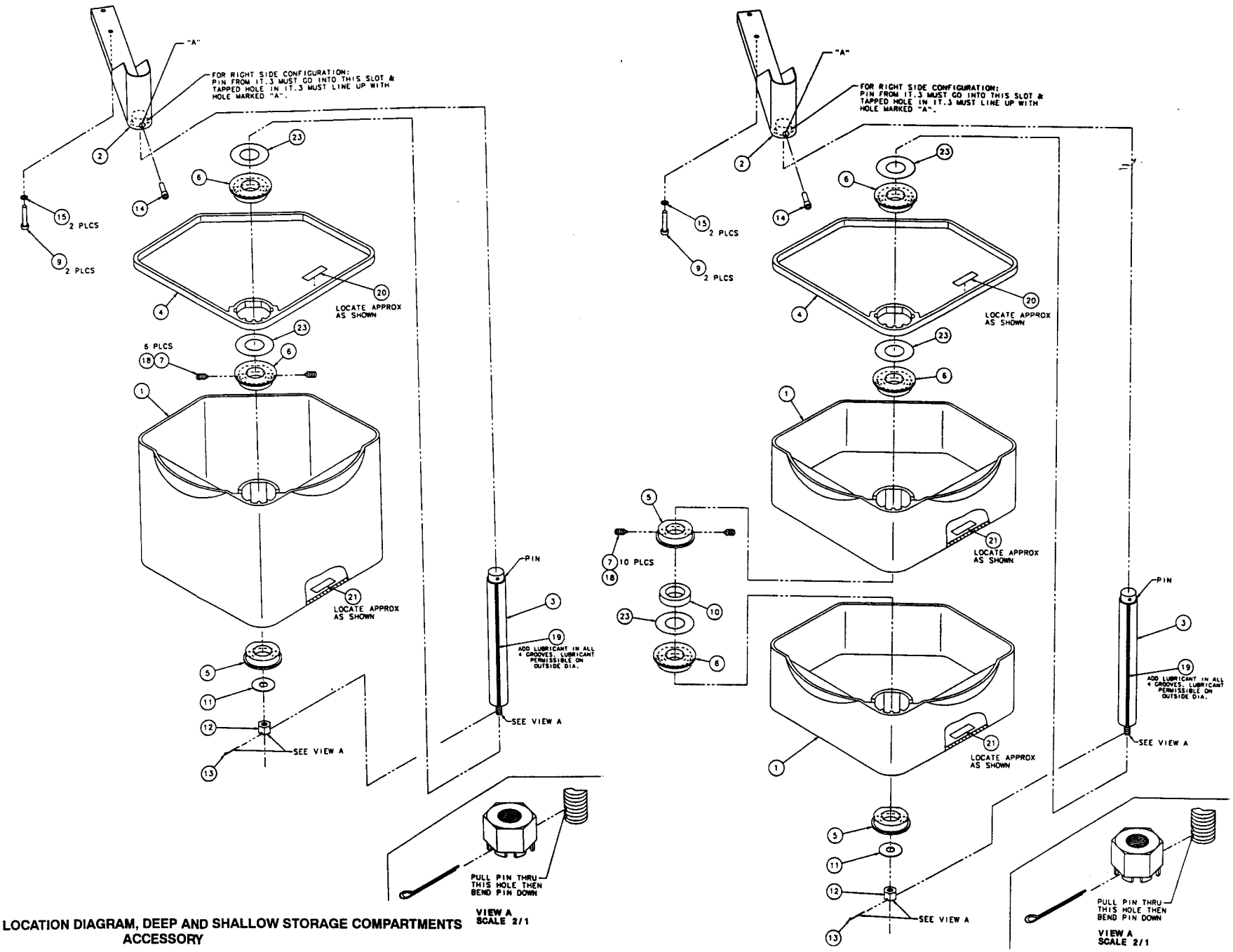


FIGURE 6.30: PARTS LOCATION DIAGRAM, DEEP AND SHALLOW STORAGE COMPARTMENTS ACCESSORY

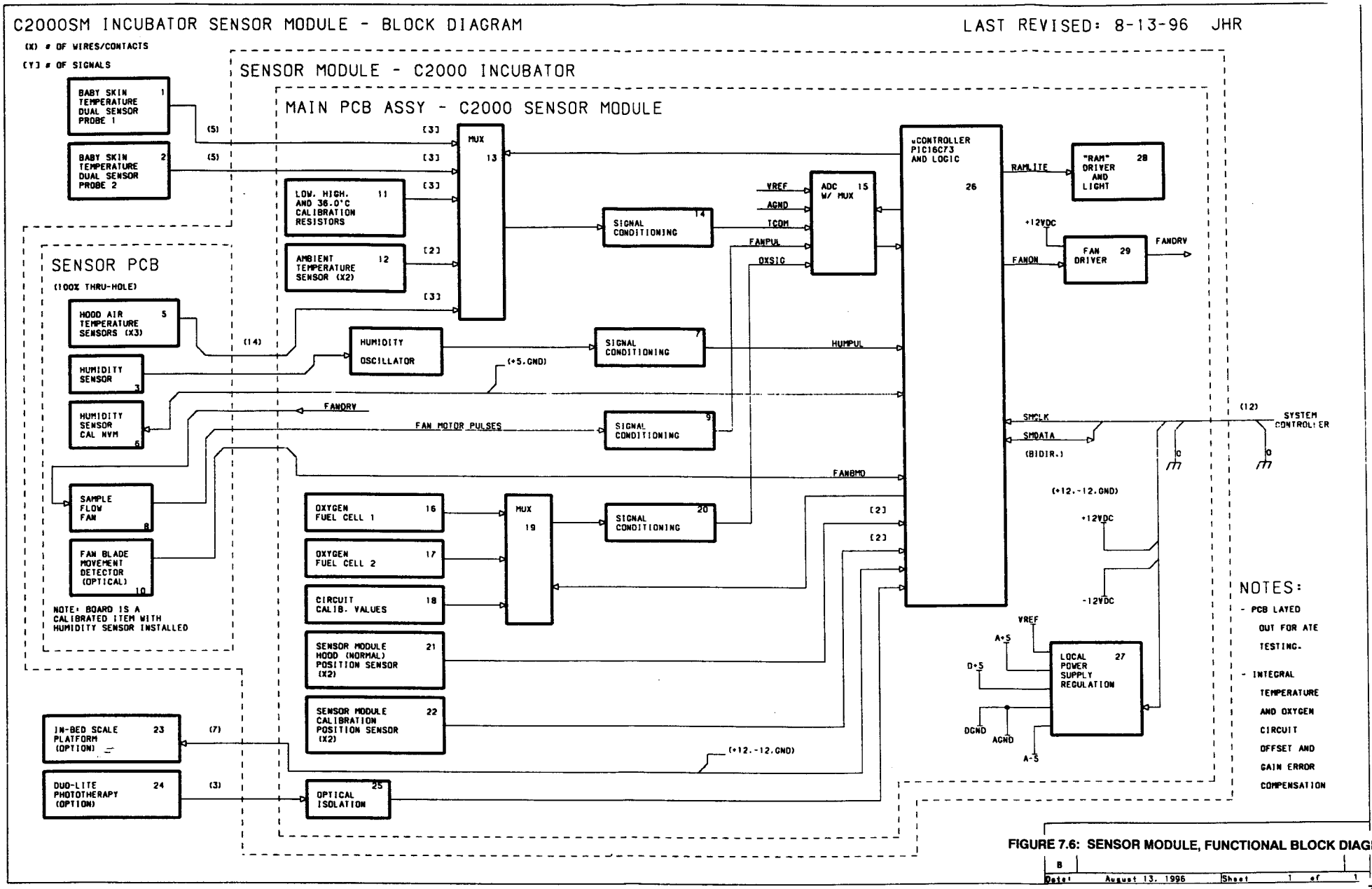


FIGURE 7.6: SENSOR MODULE, FUNCTIONAL BLOCK DIAGRAM

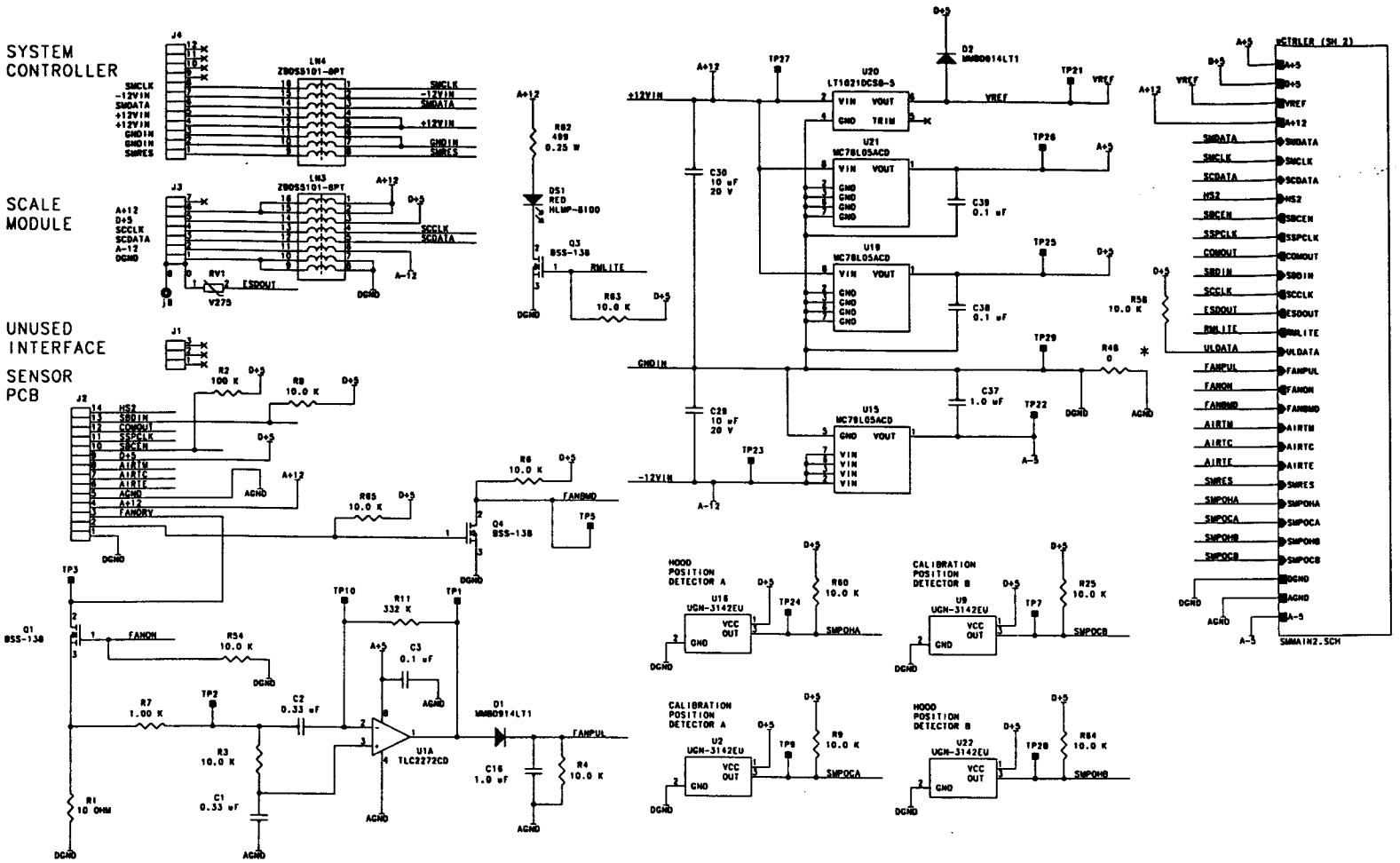
NOTES:

1) Unless otherwise indicated, all resistors are ±1%, 1/8W.
2) Resistor R48 represents a single point connection between AGND and DGND.

PARTS LIST					
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M

ISOLETTE® INFANT INCUBATOR DIAGRAMS

REVISIONS
D.PRELIMINARY: DRN 938-36
DRU 18 JUL 96 / JHR 02 AUG 96
1.ISSUE: DRN 938-57 (C3)R82 0.25W WAS 0.5W (B2,3)U2,U9,U18,U22 UGN-3142EU WAS UGN-3140U
DIF 13 SEP 96 / JHR 13 SEP 96
2.ECN 12249: (B3)ADDED R65 & Q4.
DRU 23 OCT 96 / JHR 29 OCT 96
3.ECN 12787: (C4)ADDED RV1. (C3,4)DEL U18 (4N35) & CHG NOMENCLATURE; UNUSED INTERFACE WAS ULTRA-LITE INTERFACE. DEL "REV STATUS OF SMT" BLOCK.
VEY 04 NOV 97 / JAF 11-6-97



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FIRST USED ON:	MATERIAL ——	FINISH ——	

FIGURE 7.7: SENSOR MODULE, PCB2 SCHEMATIC (SHEET 1 OF 4)

Change 2

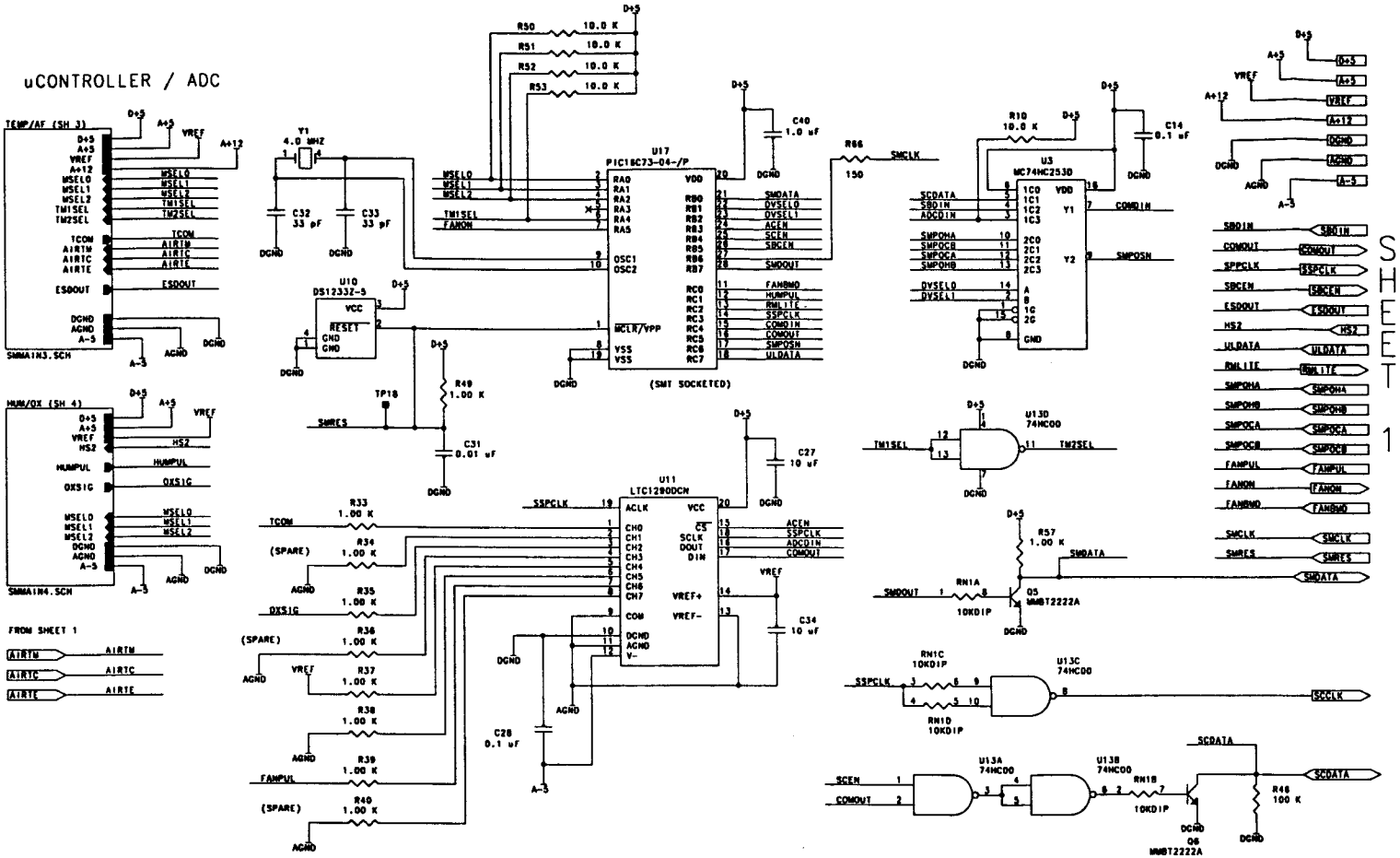
NOTES:

1) Unless otherwise indicated, all resistors are ±1%, 1/8W.

PARTS LIST					
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M

REVISIONS
0. PRELIMINARY: DRN 938-36
DRU 16 JUL 96 / JHR 02 AUG 96
3. ISSUE: DRN 938-57 (C4)C32 & C33, 33pF WAS 30pF. U11, LTC1290DCN WAS LTC1298CN
DTF 13 SEP 96 / JHR 13 SEP 96
3.ECN 12787: (C2)DEL U14B,R59 & ADD U13D. (B,C-2)ADDED Q5 & RN1A. (B2)DEL U14A,R47 & ADD U13C, RN1C & D. PUT U13B IN SERIES WITH U13A & ADD Q6 & RN1B. (C,D-2) ADD R86.
VEY 04 NOV 96 / 12-Feb 98

ISOLETTE® INFANT INCUBATOR DIAGRAMS



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FIRST USED ON: SEE SHT.1	MATERIAL SEE SHT.1	FINISH SEE SHT.1	

FIGURE 7.7: SENSOR MODULE, PCB2 SCHEMATIC (SHEET 2 OF 4)

Change 2

NOTES:

1) Unless otherwise indicated, all resistors are ±1%, 1/8W.

PARTS LIST					
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M

REVISIONS	
D.PRELIMINARY: DRN 938-36	
DRU 16 JUL 96	JHR 02 AUG 96
1.ISSUE: DRN 938-57 NO CHANGE	
DIF 04 SEP 96	JHR 13 SEP 96
3.ECN 12787: (C,D4) ADD TRACE FROM J7 PINS 0,1 & 4 TO J8 PINS 0,1 & 4 & ADDED NET ESDOUT.	
VEY 04 NOV 97	JHR 11-6-97

ISOLETTE® INFANT INCUBATOR DIAGRAMS

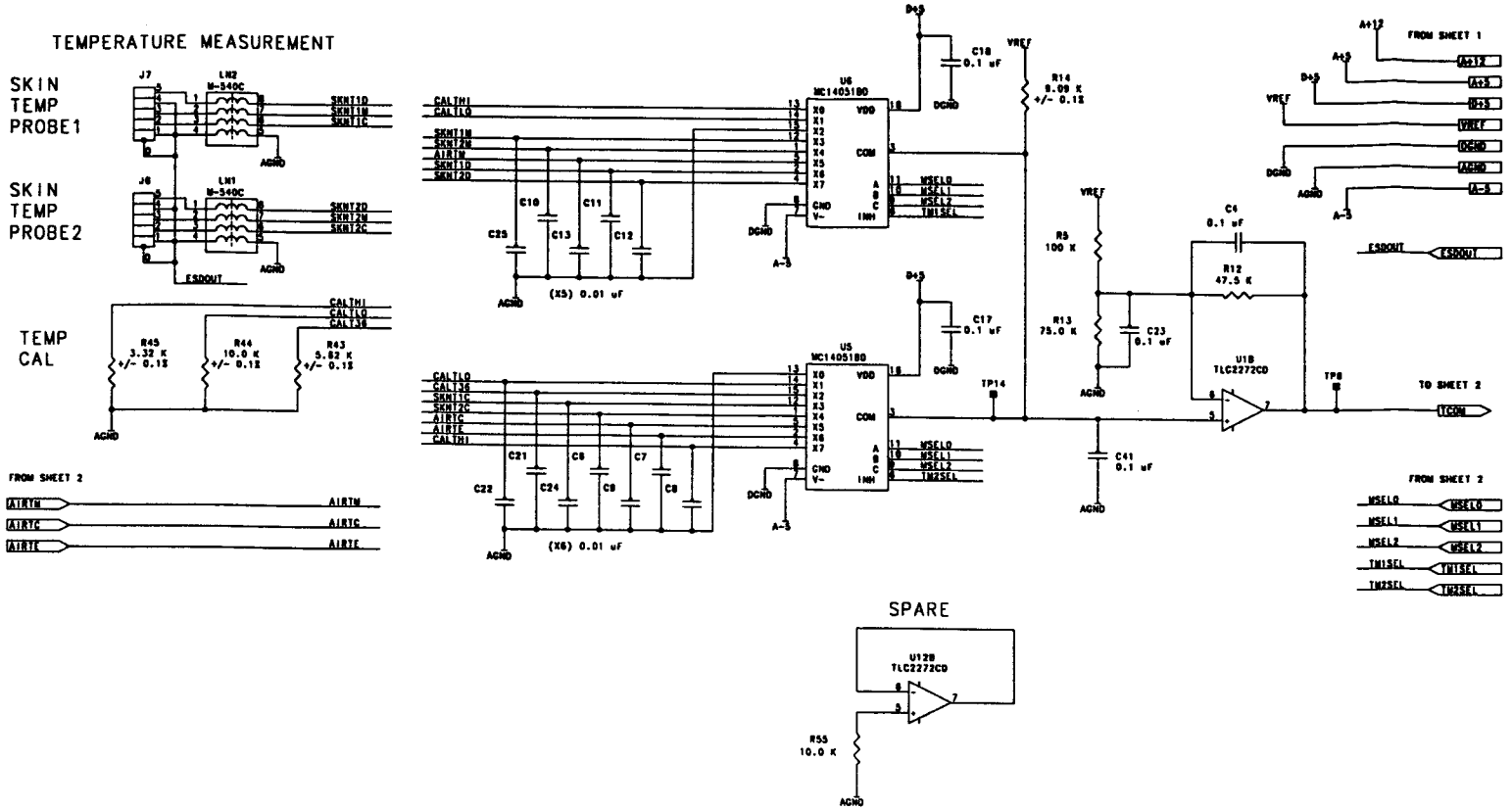

FIGURE 7.7: SENSOR MODULE, PCB2 SCHEMATIC (SHEET 3 OF 4)

Change 2

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UNLESS OTHERWISE SPECIFIED- DIMENSIONS ARE IN INCHES. TOLERANCES ON:
FRACTIONS ± —
DECIMALS .XX ± — .XXX± —
ANGLES ± —
ALL SURFACE FINISH —— √ MAX.
DO NOT SCALE DRAWING

SIGNATURES	DATE
DRAWN J.RICHARDS	16 JUL 96
CHKD	
ENG J.RICHARDS	02 AUG 96
APVD	

FIRST USED ON: SEE SHT.1

MATERIAL: SEE SHT.1

FINISH: SEE SHT.1

Air-Shields
330 Jacksonville Road, Hatboro Pa. 19040

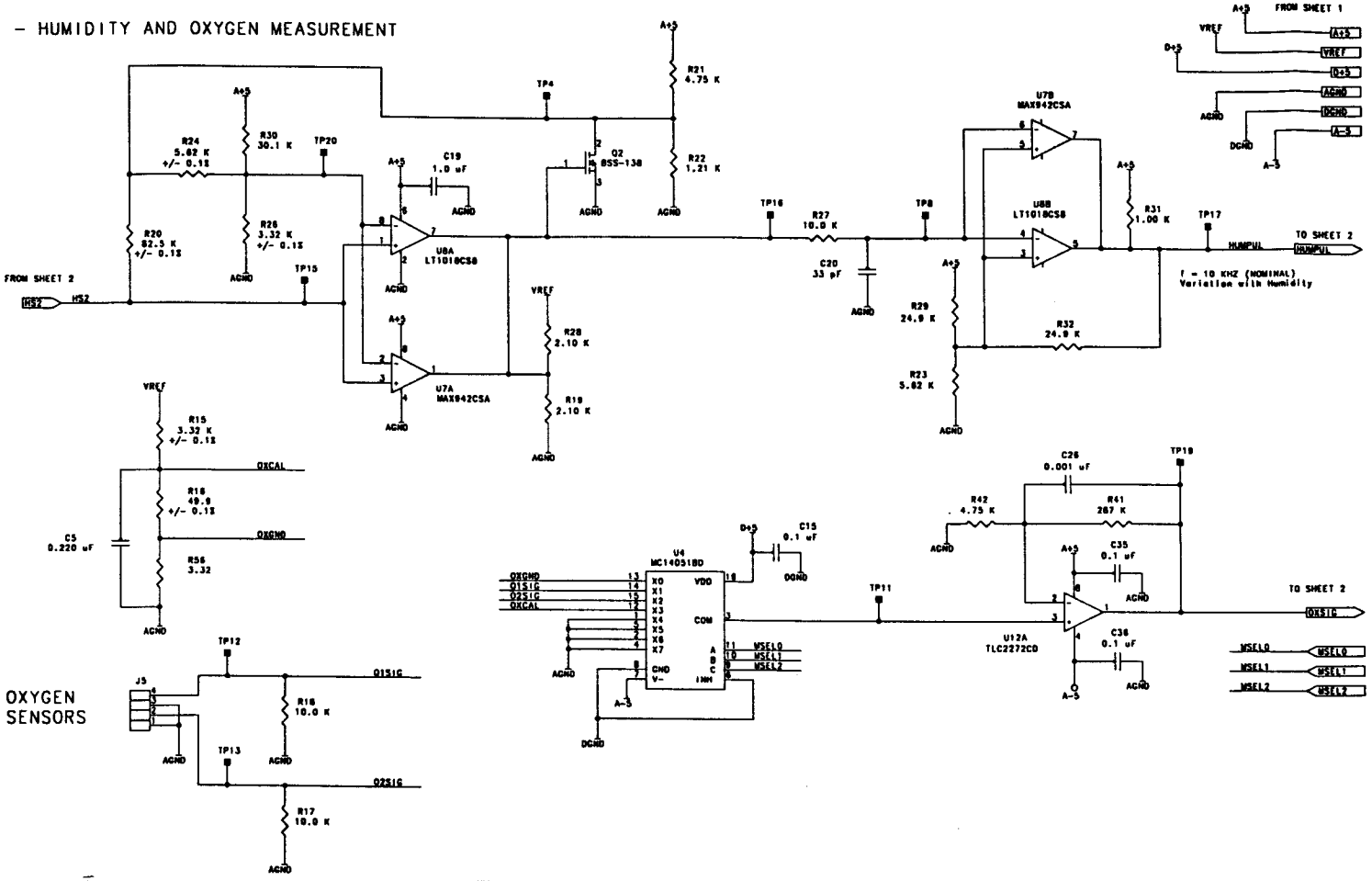
NOTES:

1) Unless otherwise indicated, all resistors are ±1%, 1/8W.

PARTS LIST					
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M

REVISIONS	
C.PRELIMINARY: DRN 938-36	
DRU 18 JUL 96	JHR 03 AUG 96
1.ISSUE: DRN 938-57 (C2) C20. 33pf WAS 30pF.	
DIF 13 SEP 96	JHR 13 SEP 96
3.ECN 12787. SEE SHT'S 1,2 & 3.	
VEY 04 NOV 97	ASK 11-Feb 98

ISOLETTE® INFANT INCUBATOR DIAGRAMS



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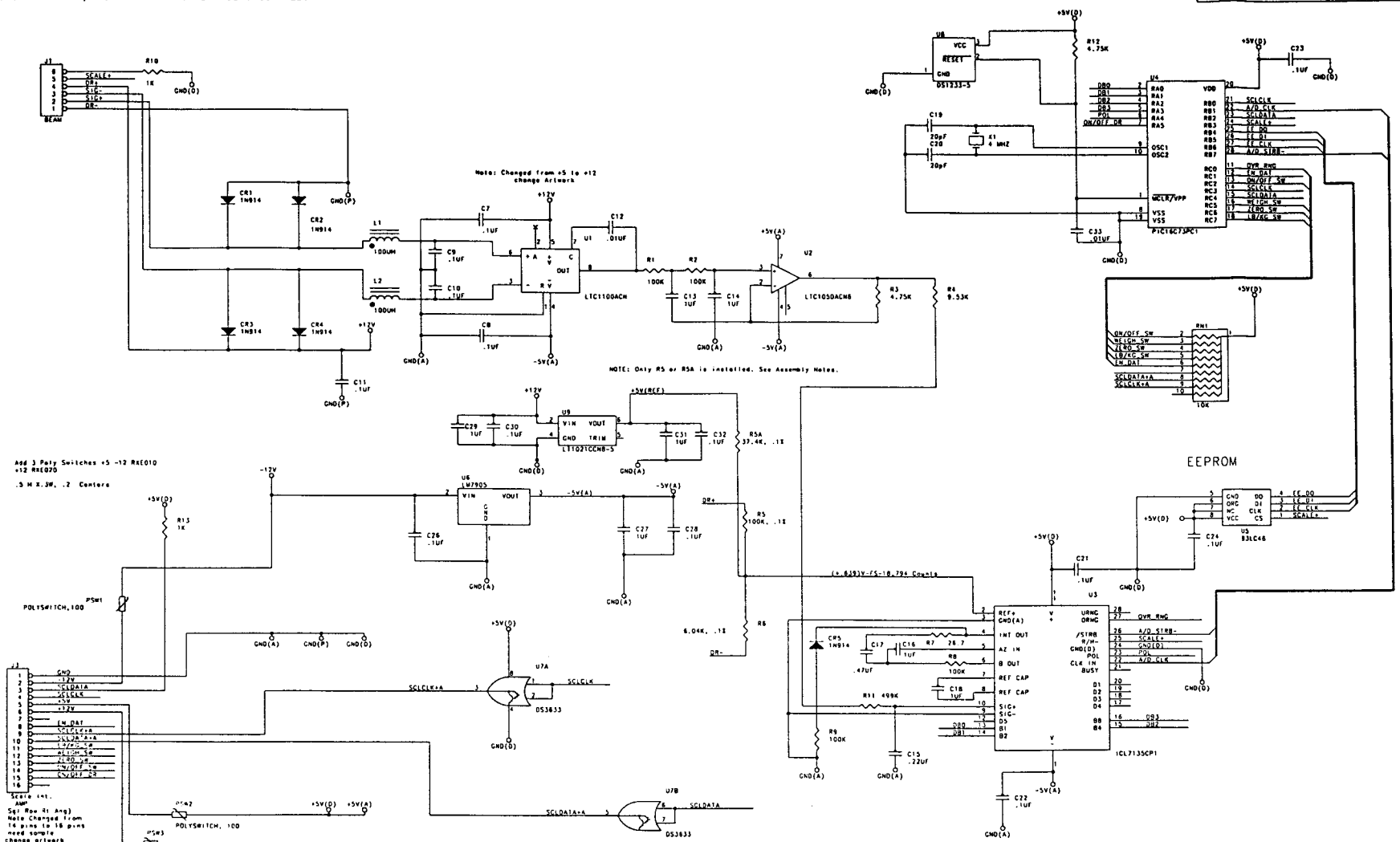
FIRST USED ON: SEE SHT.1	MATERIAL SEE SHT.1	FINISH SEE SHT.1

Air-Shields
330 Jacksonville Road, Hatboro Pa. 19040

FIGURE 7.7: SENSOR MODULE, PCB2 SCHEMATIC (SHEET 4 OF 4)

Change 2

NOTES:
1. ALL RESISTORS ARE 1/8W, 1% UNLESS OTHERWISE SPECIFIED.



PARTS LIST					
ITEM NO.	DWG SIZE	IDENT NO.	DESCRIPTION	QTY	U/M

REVISIONS
A. PRELIMINARY DRN 938-08
DRU 02 MAY 96 — JF 11 MAY 96
1. ISSUE: DRN 938-08; CHGD PER F/L CHGS
DRU 07 MAY 96

SIGNATURES	DATE
D. URBAN	02 MAY 96

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UNLESS OTHERWISE SPECIFIED- DIMENSIONS ARE IN INCHES. TOLERANCES ON: FRACTIONS DECIMALS ANGLES ± -- .XX ± -- .XXX ± --
ALL SURFACE FINISH ----
DO NOT SCALE DRAWN
MATERIAL

FIRST USED ON: 83 600 70

Last R = 13
Last C = 33
Last CR= 5
Last U = 9
Last L = 2
Last X = 1
Last J=3
Last RN = 1

FIGURE 7.8: SCALE BOARD SCHEMATIC DIAGRAM (SHEET 1 OF 1)

SCALE NONE

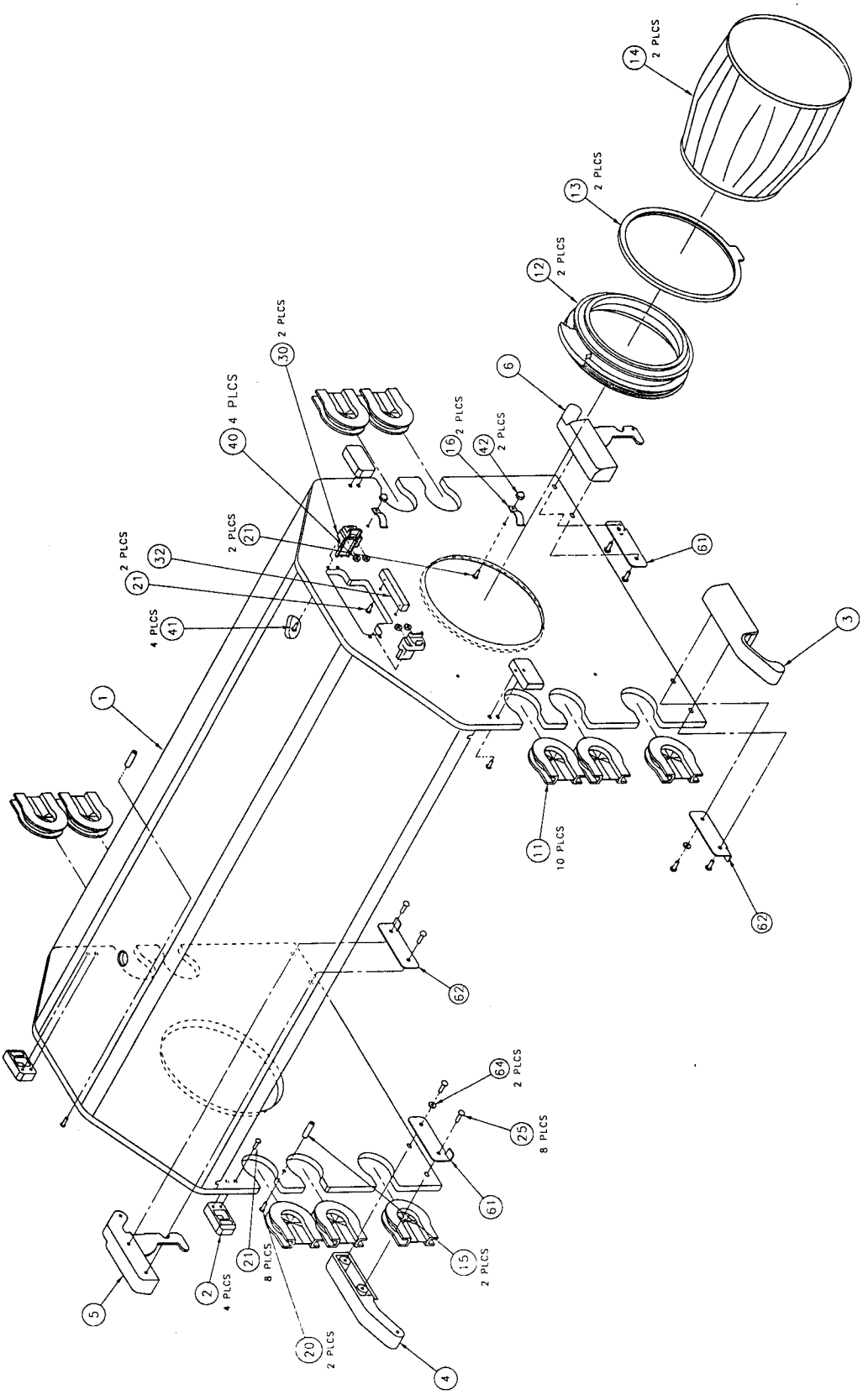


FIGURE 6.2: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 2IP SERIES 00

Change 2

TABLE 6.3: HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP, SERIES 00 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, FRONT ACCESS, 2AD, 2IP	83 200 71
1		HOOD, 2AD, 2IP, HIGH	83 200 05
2		KEEPER, ACCESS PANEL LATCH	83 200 15
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD, LEFT, REAR	83 200 16
6		HINGE, HOOD, RIGHT, REAR	83 200 17
7 AND 8		NOT USED	
9		DOOR ACCESS (also order item 42)	83 300 05
10		CUFF, ACCESS DOOR	83 300 06
11		GASKET, ACCESS DOOR	83 300 07
12		PIVOT HINGE, ACCESS DOOR	83 300 08
13		SPRING, TRSN, .27OD, .030W, .365LG	68 510 10
14		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
15		LATCH MOUNT, ACCESS DOOR*	83 300 15
16		CLAMP CABLE, .25 DIA	83 200 23
17 AND 18		NOT USED	
19		GROMMET, ACCESS	83 200 20
20		RING ASSY, IRIS PORT, LG FLANGE	68 120 76
21		RING, RETAINING, IRIS PORT, CLEAR	68 120 32
22		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
23		HEAT SHIELD, ACCESS PANEL, HI	83 001 10
24		CLAMP, CABLE, SPR TY, NYL 0.38ID	81 020 20
25 THRU 28		NOT USED	
29		SCR, SLFTPG, 8 - 32 x 3/8 BTR PH SS 60-1	88 088 67
30 AND 31		NOT USED	
32		SCR, 6-32X3/8 TR, PH, SS, NYLOK	99 023 51
33		SCR, 6-32X7/16 TR, PH, SS, NYLOK	99 023 64
34		NOT USED	
35		SCR, 10- 32 X 9/16 TR PH SS NYLOK	99 024 19
36		SCR, 10-32X 5/8 TR PH SS NY STP	99 042 66
37		SCR, 10-32X3/4 TR PH SS, NY STP	99 042 92
38		NOT USED	
39		LATCH, HEAT SHIELD	83 300 09
40		HINGE, HEAT SHIELD	83 300 10

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

TABLE 6.3: HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP,SERIES 00 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
41 AND 42		NOT USED	
43		NUT, ACORN, 6 - 32 AL	99 105 20
44		NOT USED	
45		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
46		NOT USED	
47		PLATE, COVER, NO CALIBRATION FIX.	83 200 42
48		STANDOFF, 6-32 ID 0.38OD 0.44 L ACT	68 200 24
49		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
50		NUT, HEX, 6 - 32 SS	99 105 02
56		SCR, 6-32X5/8, PN PH SS NYLOK	99 024 52
57		NUT, ACORN, 10-32 AL	99 107 20
58		HINGE PLATE AND MAGNET	83 100 45
59		MAGNET, 0.215 SQR 1.00 LG	83 300 33
60		PLATE, BACKUP, HINGE, HEAT SHIELD	83 300 04
61		PLATE, BACKUP, HINGE LF & RR	83 200 18
62		PLATE, BACKUP, HINGE LR & RF	83 200 19
63		REAR HEAT SHEILD BRACKET	83 300 13
64		BASE SCREW, 1/4 - 20 PN	67 502 51

Change 2

TABLE 6.4: HOOD ASSEMBLY, HI, DUAL ACCESS, 1AD, 1IP, SERIES 00 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 1AD, 1IP	83 200 72
1		HOOD, DUAL ACCESS, 1AD, 1IP, HI	83 200 30
2		KEEPER, ACCESS PANEL LATCH	83 200 15
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 10		NOT USED	
11		GROMMET, ACCESS	83 200 20
12		RING ASSEMBLY, IRIS PORT, LG FLANGE	68 120 76
13		RETAINING RING, IRIS PORT, CLEAR	68 120 32
14		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
15		DOOR ACCESS (also order item 43)	83 300 05
16		CLAMP CABLE, SPR TY NYL 0.38ID	81 020 20
17		CUFF, ACCESS DOOR	83 300 06
18		GASKET, ACCESS DOOR	83 300 07
19		PIVOT HINGE, ACCESS DOOR	83 300 08
20		SPRING, TRSN, .27OD, .030W, .365 LG	68 510 10
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
23		LATCH MOUNT, ACCESS DOOR*	83 300 15
24		SCR, 6 - 32 X 5/8 TR PH SS	99 024 43
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26		NOT USED	
27 THRU 29		NOT USED	
30		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33 THRU 39		NOT USED	
40		NUT, HEX, 6-32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT 83 900 09

Change 2

TABLE 6.4: HOOD ASSEMBLY, HI, DUAL ACCESS, 1AD, 1IP,SERIES 00 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
42		NOT USED	
43		NUT ACORN 6-32 AL	99 105 20
44		NOT USED	
45		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
46		STANDOFF 6-32 ID 0.38 OD 0.44L	68 232 24
61		BACKUP PLATE, HINGE LF & RR	83 200 18
62		BACKUP PLATE, HINGE LR & RF	83 200 19
64		BASE SCREW, 1/4 - 20 PN	67 502 71

Change 2

TABLE 6.5: HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD, SERIES 00 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 2AD,	83 200 73
1		HOOD, DUAL ACCESS, 1AD, 1IP, HI	83 200 31
2		KEEPER, ACCESS PANEL LATCH	83 200 15
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 10		NOT USED	
11		GROMMET, ACCESS	83 200 20
12 AND 13		NOT USED	
14		STANDOFF, 6-32 ID 0.38 OD 0.44 T	68 232 24
15		DOOR ACCESS (also order item 43)	83 300 05
16		CLAMP CABLE, SPR TY NYL 0.38ID	81 020 20
17		CUFF, ACCESS DOOR	83 300 06
18		GASKET, ACCESS DOOR	83 300 07
19		PIVOT HINGE, ACCESS DOOR	83 300 08
20		SPRING, TRSN, .27OD, .030W, .365 LG	68 510 10
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
23		LATCH MOUNT, ACCESS DOOR*	83 300 15
24		SCR, 6-32 X 9/16 TR PH SS	99 024 18
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26		SCR, 6 - 32 X 5/8 TR PH SS	99 024 43
27		NOT USED	
28 THRU 29		NOT USED	
30		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33		NOT USED	
34 THRU 39		NOT USED	
40		NUT, HEX, 6-32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT 83 900 09

TABLE 6.5: HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD, SERIES 00 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
42		NOT USED	
43		NUT ACORN 6-32 AL	99 105 20
61		BACKUP PLATE, HINGE LF & RR	83 200 18
62		BACKUP PLATE, HINGE LR & RF	83 200 19
64		BASE SCREW, 1/4 - 20 PN	67 502 51

Change 2

TABLE 6.6: HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD, SERIES 00 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, FRONT ACCESS, 4AD,	83 200 74
1		HOOD, FRONT ACCESS, 4AD	83 200 33
2		KEEPER, ACCESS PANEL LATCH	83 200 15
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD, LEFT REAR	83 200 16
6		HINGE, HOOD, RIGHT REAR	83 200 17
7 AND 8		NOT USED	
9		ACCESS DOOR	83 300 05
10		ACCESS DOOR CUFF	83 000 06
11		GASKET, ACCESS DOOR	83 300 07
12		ACCESS DOOR PIVOT HINGE	83 300 08
13		TRSN SPRING 0.27OD 0.030W 0.365L	68 510 10
14		ACCESS DOOR LATCH ASSY*	83 300 65
15		ACCESS DOOR LATCH MOUNT*	83 300 15
16 THRU 18		NOT USED	
19		ACCESS GROMMET	83 200 20
20		NOT USED	
21		STANDOFF, 6-32 ID, 0.38 0D 0.44L	68 232 24
22		NOT USED	
23		ACCESS PANEL HEAT SHIELD	83 001 10
24		CABLE CLAMP SPR TY NYL 0.38ID	81 020 20
25 THRU 28		NOT USED	
29		SCR, SLFTPG, 6-32 X 3/8 F TR PH S4	99 085 15
30 THRU 31		NOT USED	
32		SCR, 8 - 32 X 3/8 B, TR PH SS 60-1	99 088 67
33		6 - 32 x 7/16 TR PH SS NYLOK	99 023 64
34		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
35		SCR, 6 - 32 X 9/16 TR PH SS NYLOK	99 024 19
36		SCR, 10 - 32 X 5/8 TR PH SS NYLOK	99 042 66
37		SCR, 10 - 32 X 3/4 TR PH SS NY STP	99 042 92
38		NUT, HEX 6- 32 SS	99 105 02
39		HEAT SHIELD LATCH	83 000 09
40		HEAT SHIELD HINGE	83 300 10
41		SCR. 6 - 32 X 5/8 TR PH SS	99 024 43

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

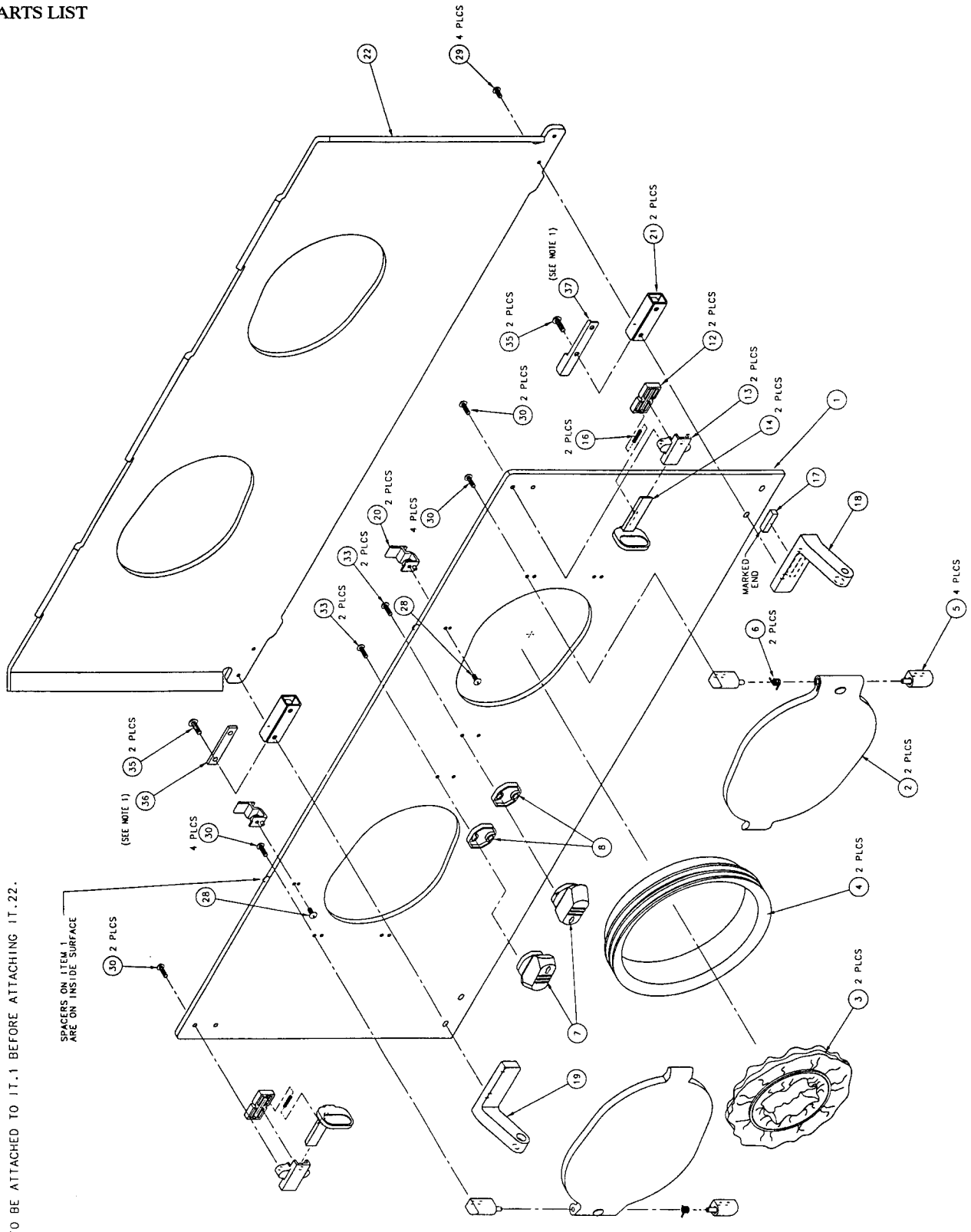
Change 2

TABLE 6.6: HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD, SERIES 00 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
42		NOT USED	
43		NUT ACORN 6-32 AL	99 105 20
44		NOT USED	
45		SENSOR MODULE SLIDE	83 200 45
46		NOT USED	
47		COVER PLATE, NO CAL FIXT	83 200 42
48 THRU 55		NOT USED	
56		SCR, 6 - 32 X 5/8 PN PH SS NYLOK	99 024 52
57		NOT USED	
58		HINGE PLATE AND MAGNET	83 100 45
59		MAGNET 0.25 SQR 1.00 LG	83 300 33
60		PLATE, BACKUP, HEAT SHIELD HINGE	83 300 04
61		BACKUP PLATE, HINGE LF & RR	83 200 18
62		BACKUP PLATE, HINGE LR & RF	83 200 19
63		HEAT SHIELD BRACKET, REAR	83 300 13
64		BASE SCREW, 1/4 - 20 PN	67 502 51

Change 2



NOTES:
1. IT. 21, 36 & 37 TO BE ATTACHED TO IT. 1 BEFORE ATTACHING IT. 22.

FIGURE 6.7: PARTS LOCATION DIAGRAM, ACCESS PANEL FRONT ASSEMBLY SERIES 00 (SHEET 1 OF 1)

Change 2

TABLE 6.7: ACCESS PANEL FRONT ASSEMBLY, SERIES 00 PARTS LIST

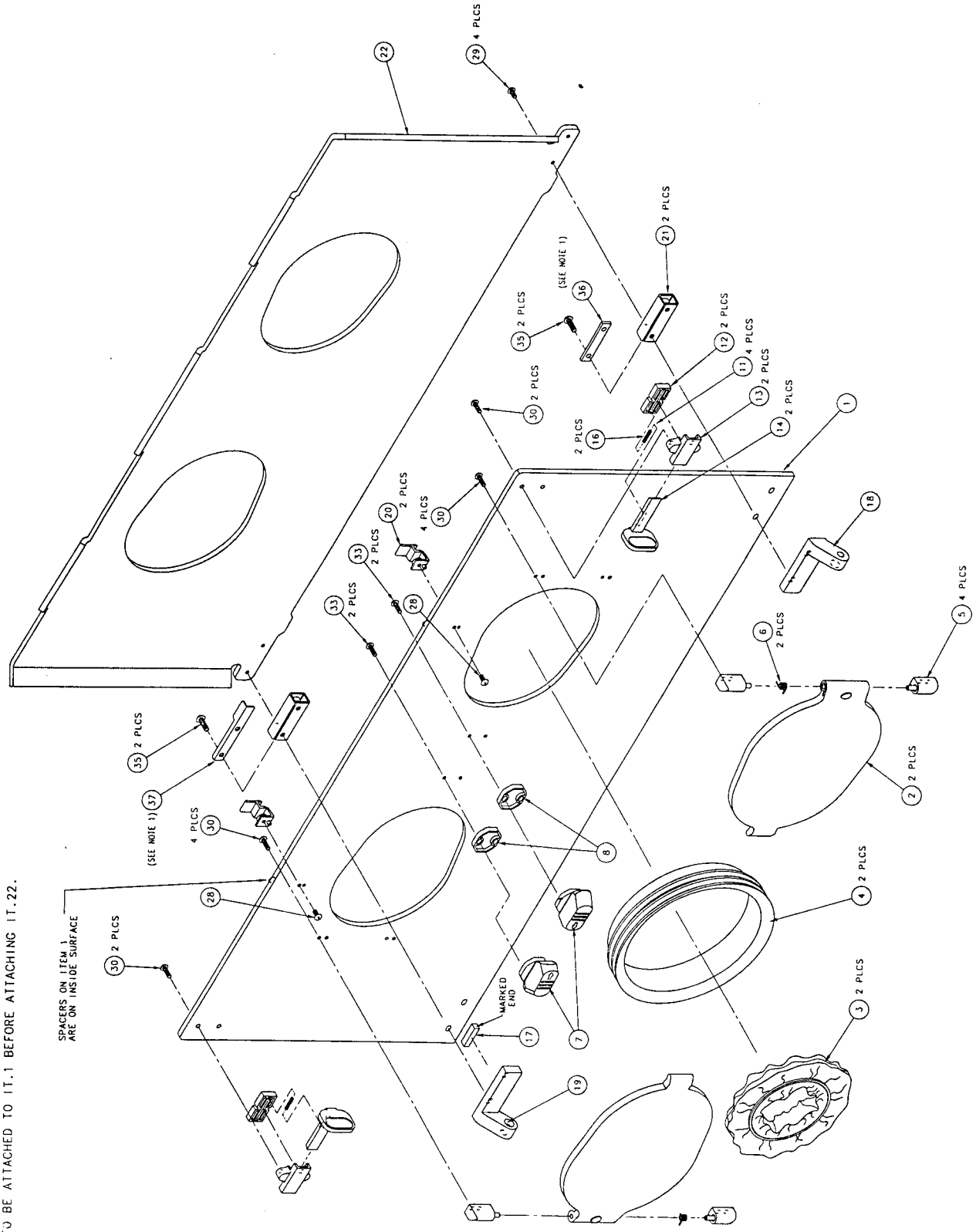
(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		ACCESS PANEL FRONT ASSEMBLY	83 300 70
1		PANEL, ACCESS, HIGH	83 300 00
2		DOOR, ACCESS	83 300 05
3		CUFF, ACCESS DOOR	83 300 06
4		GASKET, ACCESS DOOR	83 300 07
5		PIVOT HINGE, ACCESS DOOR	83 300 08
6		SPRING, TRSN, .27OD .030W .365LG	68 510 10
7		ACCESS DOOR LATCH ASSY *	83 300 65
8		LATCH MOUNT, ACCESS DOOR*	83 300 15
9 thru 11		NOT USED	
12		LOWER BODY, ACC PNL LATCH**	83 300 26
13		UPPER BODY, ACC PNL LATCH**	83 300 25
14		SLIDE ASSY, ACC PNL LATCH **	83 300 60
15		NOT USED	
16		SPRING, CPRS .18OD .014W 1.50LG**	83 300 29
17		MAGNET, .25SQ 1.00LG CSTALNICO	83 300 33
18		HINGE, ACCESS PNL, RIGHT, FRONT	83 300 30
19		HINGE, ACCESS, PNL, LEFT, FRONT	83 300 31
20		LATCH, HEAT SHIELD	83 300 09
21		HINGE, HEAT SHIELD	83 300 10
22		HEAT SHIELD, ACCESS PNL, HI	83 001 10
23 THRU 27		NOT USED	
28		SCR,6-32X3/8 TR PH SS NYLOK	99 023 51
29		SCR, SLFTPG, 6-32X3/8 B PN PH SS	99 085 21
30		SCR, 6-32X7/16 TR PH SS NYLOK	99 023 64
31 AND 32		NOT USED	
33		SCR, 6-32X9/16 TR PH SS NYLOK	99 024 19
34		NOT USED	
35		SCR,10-32 X 5/8 TR PH SS NYLOK	99 042 66
36		PLATE, BACKUP, HINGE, HEAT SHIELD	83 300 04
37		HEAT SHIELD BRACKET, FRONT	83 300 12
38		SPACER, 6 - 32 ID X 0.31 OD , 0.5L	83 300 57
39		SCREW, 6 - 32 X 7/16 TR PH SS	99 023 63

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

**ORDER ACCESS PANEL LATCH REPLACEMENT KIT PART NUMBER 83 900 08

Change 2



NOTES:
1. IT.21, 36 & 37 TO BE ATTACHED TO IT.1 BEFORE ATTACHING IT.22.

FIGURE 6.8: PARTS LOCATION DIAGRAM, ACCESS PANEL REAR ASSEMBLY SERIES 00

Change 2

TABLE 6.8: ACCESS PANEL REAR ASSEMBLY, SERIES 00 PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		ACCESS PANEL REAR ASSEMBLY	83 300 71
1		PANEL, ACCESS, HIGH	83 300 00
2		DOOR, ACCESS	83 300 05
3		CUFF, ACCESS DOOR	83 300 06
4		GASKET, ACCESS DOOR	83 300 07
5		PIVOT HINGE, ACCESS DOOR	83 300 08
6		SPRING, TRSN, .27OD .030W .365LG	68 510 10
7		ACCESS DOOR LATCH ASSY *	83 300 65
8		LATCH MOUNT, ACCESS DOOR*	83 300 15
9 thru 10		NOT USED	
12		LOWER BODY, ACC PNL LATCH **	83 300 26
13		UPPER BODY, ACC PNL LATCH**	83 300 25
14		SLIDE ASSY, ACC PNL LATCH**	83 300 60
15		NOT USED	
16		SPRING, CPRS .18OD .014W 1.50LG**	83 300 29
17		MAGNET, .25SQ 1.00LG CSTALNICO	83 300 33
18		HINGE, ACCESS PNL, LEFT, REAR	83 300 35
19		HINGE, ACCESS PNL, RIGHT, REAR	83 300 36
20		LATCH, HEAT SHIELD	83 300 09
21		HINGE, HEAT SHIELD	83 300 10
22		HEAT SHIELD, ACCESS PNL, HI	83 001 10
23 THRU 27		NOT USED	
28		SCR, 6-32X3/8 TR PH SS NYLOK	99 023 51
29		SCR, SLFTPG, 8-32X3/8 B PH SS 60-1	99 088 67
30		SCR, 6-32X7/16 TR PH SS NYLOK	99 023 64
31 AND 32		NOT USED	
33		SCR, 6 - 32 X 9/16 TR PH SS NYLOK	99 024 19
34		NOT USED	
35		SCR, 10 - 32 X 5/8 TR PH SS NYLOK	99 042 66
36		BACKUP PLATE, HEAT SHIELD HINGE	83 300 04
37		HEAT SHIELD BRACKET, REAR	83 300 13
38		SPACER, 6 - 32 ID X 0.31 OD , 0.5L	83 300 57
39		SCREW, 6 - 32 X 7/16 TR PH SS	99 023 63

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

**OREDER ACCESS PANEL LATCH REPLACEMENT KIT PART NUMBER 83 900 08

Change 2

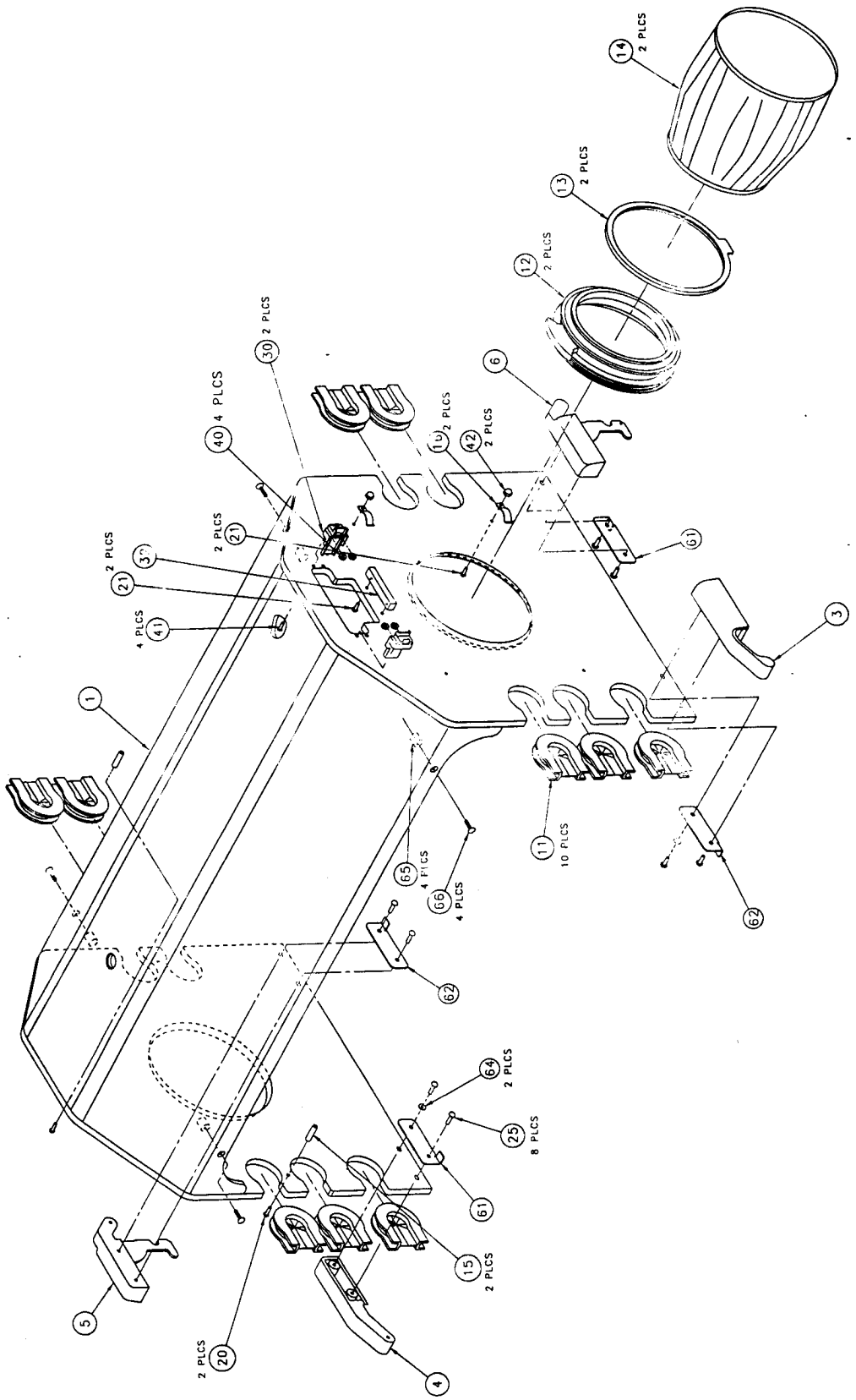


FIGURE 6.9: PARTS LOCATION DIAGRAM, HOOD ASSEMBLY, HI, DUAL ACCESS, 2IP SERIES 01 (SHEET 1 OF 1)
Change 2

TABLE 6.10: HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP, SERIES 01 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, FRONT ACCESS, 2AD, 2IP	83 200 78
1		HOOD, 2AD, 2IP, HIGH	83 200 05
2		NOT USED	
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD, LEFT, REAR	83 200 16
6		HINGE, HOOD, RIGHT, REAR	83 200 17
7 AND 8		NOT USED	
9		DOOR ACCESS (also order item 42)	83 300 05
10		CUFF, ACCESS DOOR	83 300 06
11		GASKET, ACCESS DOOR	83 300 07
12		PIVOT HINGE, ACCESS DOOR	83 300 08
13		SPRING, TRSN, .27OD, .030W, .365LG	68 510 10
14		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
15		LATCH MOUNT, ACCESS DOOR*	83 300 15
16		NOT USED	
17 AND 18		NOT USED	
19		GROMMET, ACCESS	83 200 20
20		RING ASSY, IRIS PORT, LG FLANGE	68 120 76
21		RING, RETAINING, IRIS PORT, CLEAR	68 120 32
22		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
23		HEAT SHIELD, ACCESS PANEL, HI	83 001 10
24		CLAMP, CABLE, SPR TY, NYL 0.38ID	81 020 20
25 THRU 28		NOT USED	
29		SCR, SLFTPG, 8 – 32 X 3/8 TR PH SS NYLOK	99 088 67
30 AND 31		NOT USED	
32		SCR, 6-32X3/8 TR, PH, SS, NYLOK	99 023 51
33		SCR, 6-32X7/16 TR, PH, SS, NYLOK	99 023 64
34		NOT USED	
35		SCR, 10- 32 X 9/16 TR PH SS NYLOK	99 024 19
36		SCR, 10-32X 5/8 TR PH SS NY STP	99 042 66
37		SCR, 10-32X3/4 TR PH SS, NY STP	99 042 92
38		NOT USED	
39		LATCH, HEAT SHIELD	83 300 09
40		HINGE, HEAT SHIELD	83 300 10

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

TABLE 6.10: HOOD ASSEMBLY, HI, FRONT ACCESS, 2AD, 2IP,SERIES 01 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
41 AND 42		NOT USED	
43		NUT, ACORN, 6 - 32 AL	99 105 20
44		NOT USED	
45		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
46		NOT USED	
47		PLATE, COVER, NO CALIBRATION FIX.	83 200 42
48		STANDOFF, 6-32 ID 0.38OD 0.44 L ACT	68 232 24
49		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
50		NUT, HEX, 6 - 32 SS	99 105 02
56		SCR, 6-32X5/8, PN PH SS NYLOK	99 024 52
57		NOT USED	
58		HINGE PLATE AND MAGNET	83 100 45
59		MAGNET, 0.215 SQR 1.00 LG	83 300 33
60		PLATE, BACKUP, HINGE, HEAT SHIELD	83 300 04
61		PLATE, BACKUP, HINGE LF & RR	83 200 18
62		PLATE, BACKUP, HINGE LR & RF	83 200 19
63		REAR HEAT SHEILD BRACKET	83 300 13
64		BASE SCREW, 1/4 - 20 PN	67 502 51
65		SPACER, 6 - 32 0.31 OD X 0.38 LG	83 300 56
66		SCREW, 6 - 32 X 7/6 FL PH SS	99 023 58
67		NOT USED	

Change 2

TABLE 6.11: HOOD ASSEMBLY, HI, DUAL ACCESS, 1AD, 1IP, SERIES 01 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 1AD, 1IP	83 200 79
1		HOOD, DUAL ACCESS, 1AD, 1IP, HI	83 200 30
2		NOT USED	
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 10		NOT USED	
11		GROMMET, ACCESS	83 200 20
12		RING ASSEMBLY, IRIS PORT, LG FLANGE	68 120 76
13		RETAINING RING, IRIS PORT, CLEAR	68 120 32
14		SLEEVE, IRIS PORT, DISPOS, SOFT	68 120 57
15		DOOR ACCESS (also order item 43)	83 300 05
16		CLAMP CABLE, SPR TY NYL 0.38ID	81 020 20
17		CUFF, ACCESS DOOR	83 300 06
18		GASKET, ACCESS DOOR	83 300 07
19		PIVOT HINGE, ACCESS DOOR	83 300 08
20		SPRING, TRSN, .27OD, .030W, .365 LG	68 510 10
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
23		LATCH MOUNT, ACCESS DOOR*	83 300 15
24		SCR, 6 - 32 X 5/8 TR PH SS	99 024 43
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26		FLAT WASHER, 0.15 ID, 0.31 OD 0.06T NYL	99 122 04
27 THRU 29		NOT USED	
30		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33 THRU 39		NOT USED	
40		NUT, HEX, 6-32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT 83 900 09

Change 2

TABLE 6.12: HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD, SERIES 01 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, DUAL ACCESS, 2AD,	83 200 80
1		HOOD, DUAL ACCESS, 1AD, 1IP, HI	83 200 31
2		NOT USED	
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD/ACCESS PNL, LEFT REAR	83 200 12
6		HINGE, HOOD/ACCESS PNL, RIGHT REAR	83 200 13
7 THRU 10		NOT USED	
11		GROMMET, ACCESS	83 200 20
12 AND 13		NOT USED	
14		STANDOFF, 6-32 ID 0.38 OD 0.44 T	68 232 24
15		DOOR ACCESS (also order item 43)	83 300 05
16		CLAMP CABLE, SPR TY NYL 0.38ID	81 020 20
17		CUFF, ACCESS DOOR	83 300 06
18		GASKET, ACCESS DOOR	83 300 07
19		PIVOT HINGE, ACCESS DOOR	83 300 08
20		SPRING, TRSN, .27OD, .030W, .365 LG	68 510 10
21		SCR, 6-32 X 9/16 TR PH SS NYLOK	99 024 19
22		ACCESS DOOR LATCH ASSEMBLY*	83 300 65
23		LATCH MOUNT, ACCESS DOOR*	83 300 15
24		SCR, 6-32 X 9/16 TR PH SS	99 024 18
25		SCR, 10-32 X 3/4 TR PH SS, NY STP	99 042 92
26		SCR, 6 - 32 X 5/8 TR PH SS	99 024 43
27		FLAT WASHER, 0.150 ID, 0.31 OD 0.06T NYL	99 122 04
28 THRU 29		NOT USED	
30		SLIDE ASSEMBLY, SENSOR MODULE	83 200 45
31		NOT USED	
32		PLATE, COVER, NO CALIBRATION FIXTURE	83 200 42
33 THRU 39		NOT USED	
40		NUT, HEX, 6-32 SS	99 105 02
41		SCR, 6-32X5/8, PN, PH, SS, NYLOK	99 024 52

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT 83 900 09

Change 2

TABLE 6.12: HOOD ASSEMBLY, HI, DUAL ACCESS, 2AD, SERIES 01 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
42		NOT USED	
43		NUT ACORN 6-32 AL	99 105 20
61		BACKUP PLATE, HINGE LF & RR	83 200 18
62		BACKUP PLATE, HINGE LR & RF	83 200 19
64		BASE SCREW, 1/4 - 20 PN	67 502 51
65		SPACER, 6 - 32 0.31 OD X 0.38LG AC	83 300 56
66		SCREW, 6 - 32 X 7/16 FL PH SS	99 023 58
67		NOT USED	

Change 2

TABLE 6.13: HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD, SERIES 01 PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HOOD ASSY, HI, FRONT ACCESS, 4AD,	83 200 81
1		HOOD, FRONT ACCESS, 4AD	83 200 33
2		NOT USED	
3		HINGE, HOOD/ACCESS PNL, RIGHT FRONT	83 200 10
4		HINGE, HOOD/ACCESS PNL, LEFT, FRONT	83 200 11
5		HINGE, HOOD, LEFT REAR	83 200 16
6		HINGE, HOOD, RIGHT REAR	83 200 17
7 AND 8		NOT USED	
9		ACCESS DOOR	83 300 05
10		ACCESS DOOR CUFF	83 000 06
11		GASKET, ACCESS DOOR	83 300 07
12		ACCESS DOOR PIVOT HINGE	83 300 08
13		TRSN SPRING 0.27OD 0.030W 0.365L	68 510 10
14		ACCESS DOOR LATCH ASSY*	83 300 65
15		ACCESS DOOR LATCH MOUNT*	83 300 15
16 THRU 18		NOT USED	
19		ACCESS GROMMET	83 200 20
20		NOT USED	
21		STANDOFF, 6-32 ID, 0.38 0D 0.44L	68 232 24
22		NOT USED	
23		ACCESS PANEL HEAT SHIELD	83 001 10
24		CABLE CLAMP SPR TY NYL 0.38ID	81 020 20
25 THRU 28		NOT USED	
29		SCR, SLFTPG, 8 X 3/8 TAPTITE SS	99 088 67
30 THRU 31		NOT USED	
32		SCR, 6 - 32 X 3/8 TR PH SS NYLOK	99 023 51
33		SCR, 6 - 32 X 7/16 TR PH SS NYLOK	99 023 64
34		SCR, 6 - 32 X 9/16 TR PH SS	99 024 18
35		SCR, 6 - 32 X 9/16 TR PH SS NYLOK	99 024 19
36		SCR, 10 - 32 X 5/8 TR PH SS NYLOK	99 042 66
37		SCR, 10 - 32 X 3/4 TR PH SS NY STP	99 042 92
38		NUT, HEX 6- 32 SS	99 105 02
39		HEAT SHIELD LATCH	83 000 09
40		HEAT SHIELD HINGE	83 300 10
41		SCR. 6 - 32 X 5/8 TR PH SS	99 024 43

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

TABLE 6.13: HOOD ASSEMBLY, HI, FRONT ACCESS, 4AD, SERIES 01 PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
42		NOT USED	
43		NUT ACORN 6-32 AL	99 105 20
44		FLAT WASHER, 0.150 ID, 0.31 OD, 0.06 T NYL	99 122 04
45		SENSOR MODULE SLIDE	83 200 45
46		NOT USED	
47		COVER PLATE, NO CAL FIXT	83 200 42
48 THRU 55		NOT USED	
56		SCR, 6 - 32 X 5/8 PN PH SS NYLOK	99 024 52
57		NOT USED	
58		HINGE PLATE AND MAGNET	83 100 45
59		MAGNET 0.25 SQR 1.00 LG	83 300 33
60		PLATE, BACKUP, HEAT SHIELD HINGE	83 300 04
61		BACKUP PLATE, HINGE LF & RR	83 200 18
62		BACKUP PLATE, HINGE LR & RF	83 200 19
63		HEAT SHIELD BRACKET, REAR	83 300 13
64		BASE SCREW, 1/4 - 20 PN	67 502 51
65		SPACER, 6 - 32, 0.31 OD X 0.38 LG AC	83 300 56
66		SCREW, 6 - 32 X 7/16 FL PH SS	99 023 58
67		NOT USED	

Change 2

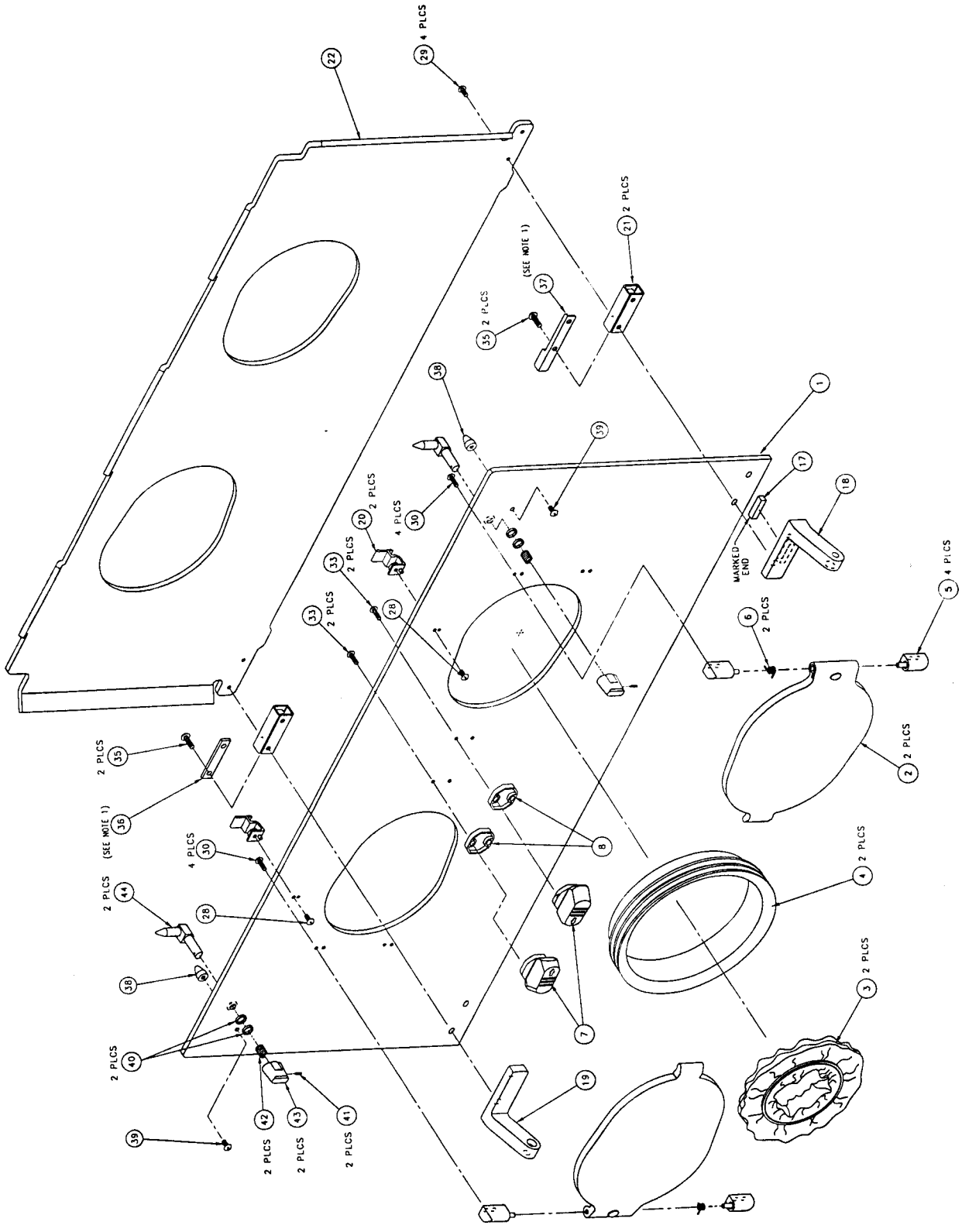


FIGURE 6.14: PARTS LOCATION DIAGRAM, ACCESS PANEL FRONT ASSEMBLY SERIES 01 (SHEET 1 OF 1)
Change 2

TABLE 6.14: ACCESS PANEL FRONT ASSEMBLY, SERIES 01 PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		ACCESS PANEL FRONT ASSEMBLY	83 300 76
1		PANEL, ACCESS, HIGH	83 300 00
2		DOOR, ACCESS	83 300 05
3		CUFF, ACCESS DOOR	83 300 06
4		GASKET, ACCESS DOOR	83 300 07
5		PIVOT HINGE, ACCESS DOOR	83 300 08
6		SPRING, TRSN, .27OD .030W .365LG	68 510 10
7		ACCESS DOOR LATCH ASSY *	83 300 65
8		LATCH MOUNT, ACCESS DOOR*	83 300 15
9 thru 16		NOT USED	
17		MAGNET, .25SQ 1.00LG CSTALNICO	83 300 33
18		HINGE, ACCESS PNL, RIGHT, FRONT	83 300 30
19		HINGE, ACCESS, PNL, LEFT, FRONT	83 300 31
20		LATCH, HEAT SHIELD	83 300 09
21		HINGE, HEAT SHIELD	83 300 10
22		HEAT SHIELD, ACCESS PNL, HI	83 001 10
23 THRU 27		NOT USED	
28		SCR,6-32X3/8 TR PH SS NYLOK	99 023 51
29		SCR, SLFTPG, 8 X 3/8 TR PH SS 60-1	99 088 67
30		SCR, 6-32X7/16 TR PH SS NYLOK	99 023 64
31 AND 32		NOT USED	
33		SCR, 6-32X9/16 TR PH SS NYLOK	99 024 19
34		NOT USED	
35		SCR,10-32 X 5/8 TR PH SS NYLOK	99 042 66
36		PLATE, BACKUP, HINGE, HEAT SHIELD	83 300 04
37		HEAT SHIELD BRACKET, FRONT	83 300 12
38		SPACER, 6 - 32 ID 0.31 OD 0.50L	83 300 57
39		SCREW, 6 - 32 X 7/16 TR PH SS	99 023 63
40 THRU 44		PAWL LATCH REPLACEMENT KIT	83 900 44

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

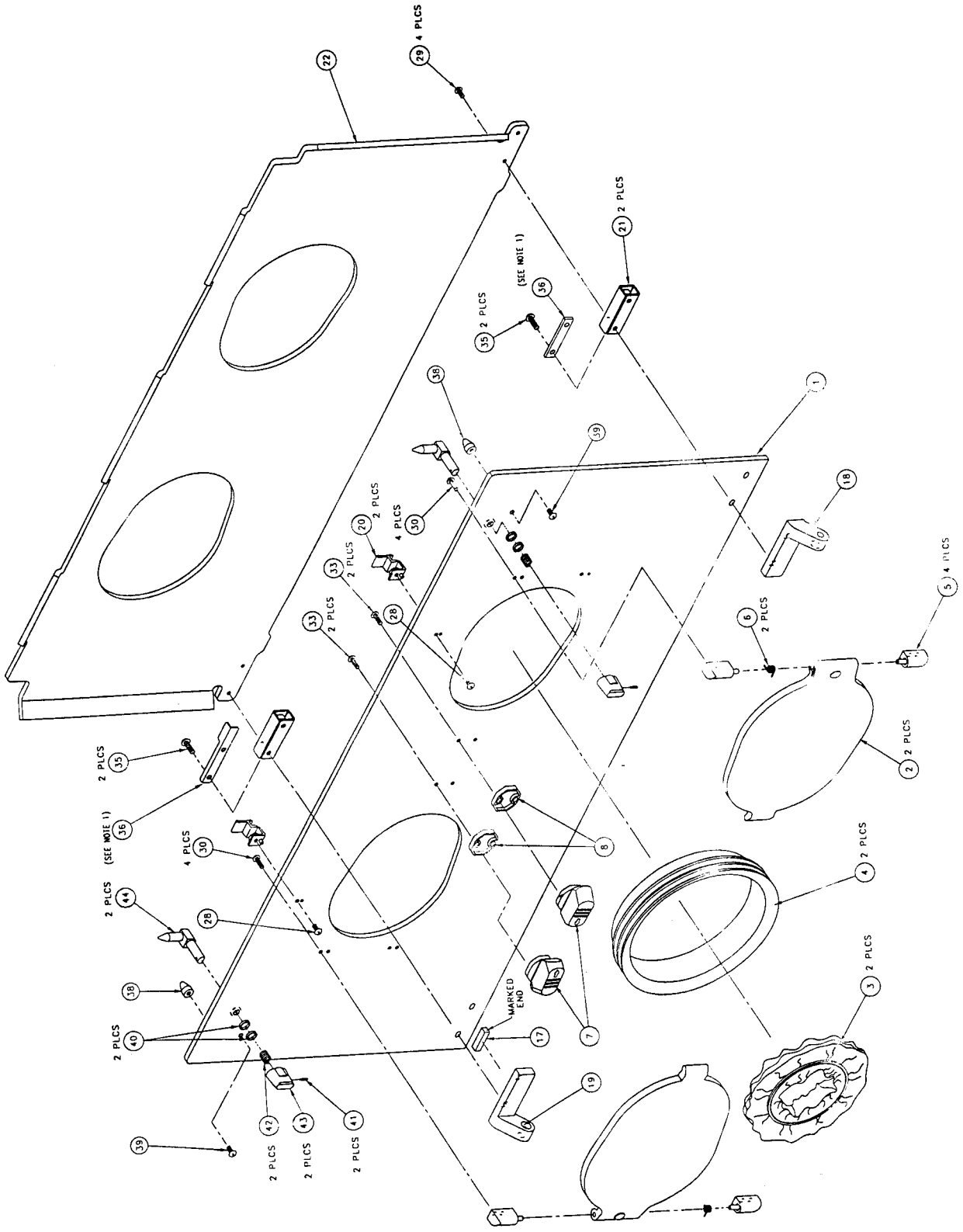


FIGURE 6.15: PARTS LOCATION DIAGRAM, ACCESS PANEL REAR ASSEMBLY SERIES 01

Change 2

TABLE 6.14: ACCESS PANEL FRONT ASSEMBLY, SERIES 01 PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		ACCESS PANEL FRONT ASSEMBLY	83 300 76
1		PANEL, ACCESS, HIGH	83 300 00
2		DOOR, ACCESS	83 300 05
3		CUFF, ACCESS DOOR	83 300 06
4		GASKET, ACCESS DOOR	83 300 07
5		PIVOT HINGE, ACCESS DOOR	83 300 08
6		SPRING, TRSN, .27OD .030W .365LG	68 510 10
7		ACCESS DOOR LATCH ASSY *	83 300 65
8		LATCH MOUNT, ACCESS DOOR*	83 300 15
9 thru 16		NOT USED	
17		MAGNET, .25SQ 1.00LG CSTALNICO	83 300 33
18		HINGE, ACCESS PNL, RIGHT, FRONT	83 300 30
19		HINGE, ACCESS, PNL, LEFT, FRONT	83 300 31
20		LATCH, HEAT SHIELD	83 300 09
21		HINGE, HEAT SHIELD	83 300 10
22		HEAT SHIELD, ACCESS PNL, HI	83 001 10
23 THRU 27		NOT USED	
28		SCR,6-32X3/8 TR PH SS NYLOK	99 023 51
29		SCR, SLFTPG, 8 X 3/8 TR PH SS 60-1	99 088 67
30		SCR, 6-32X7/16 TR PH SS NYLOK	99 023 64
31 AND 32		NOT USED	
33		SCR, 6-32X9/16 TR PH SS NYLOK	99 024 19
34		NOT USED	
35		SCR,10-32 X 5/8 TR PH SS NYLOK	99 042 66
36		PLATE, BACKUP, HINGE, HEAT SHIELD	83 300 04
37		HEAT SHIELD BRACKET, FRONT	83 300 12
38		SPACER, 6 - 32 ID 0.31 OD 0.50L	83 300 57
39		SCREW, 6 - 32 X 7/16 TR PH SS	99 023 63
40 THRU 44		PAWL LATCH REPLACEMENT KIT	83 900 44

*ORDER ACCESS DOOR LATCH REPLACEMENT KIT PART NUMBER 83 900 09

Change 2

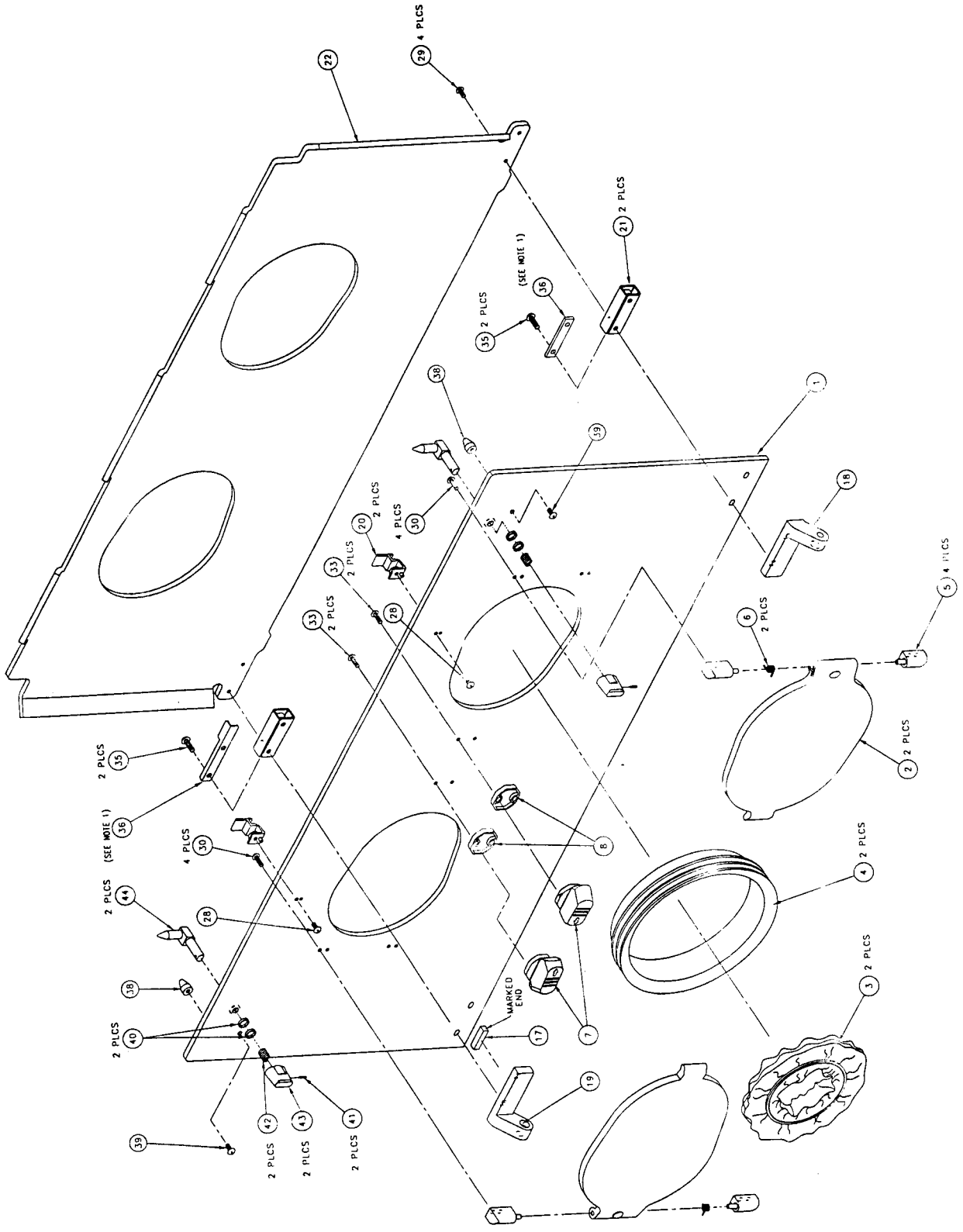


FIGURE 6.15: PARTS LOCATION DIAGRAM, ACCESS PANEL REAR ASSEMBLY SERIES 01

Change 2

TABLE 6.16: SHELL ASSEMBLY, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		SHELL ASSEMBLY	83 100 70
1		TOP SHELL REPLACEMENT KIT	
		INCLUDES LABELS AND ITEM 65	
		ENGLISH	83 900 01
		SPANISH	83 900 02
		FRENCH	83 900 03
		GERMAN	83 900 04
2		SHELL, BOTTOM	83 100 02
3		DOOR, ACCESS, FILTER	83 100 10
4		DOOR, ACCESS PNEUMATIC	83 100 11
5		DECK	83 100 03
6		COVER, SCROLL, KIT, INCLUDES LABEL	83 900 12
7		BRACKET, PIVOT, RIGHT	83 100 15
8		BRACKET, PIVOT, LEFT	83 100 16
9		EXTRUSION, BUMPER	83 100 20
10		MANIFOLD, OXYGEN	83 100 25
11		CONN, BARB, 1/4 HOSE X 1/8 NPT(M)	01 017 00
12		DOOR, HUMIDITY, COVER	83 100 41
13		CHECK VALVE ASSEMBLY	83 120 71
14		HOSE, CORR, 22 MM ID X 12.00 LG	83 100 21
15		BAR, LIFT (INCLUDES END CAPS)	83 900 11
16		MOTOR (INCLUDES 18 AND 19)	83 900 15
17		NOT USED	
18		IMPELLER, .25ID, 2.95OD, 2.61 WIDE	68 205 41
19		CLAMP, HOSE (FOR 3/8 OD)	20 015 65
20		WIRING HARNESS ASSEMBLY, AC	83 100 60
21		ISOLATOR, VIB, .44 OD, .44 LG, 4 LB	68 230 24
22		NOT USED	
23		FILTER	83 100 34
24		TILT MECHANISM ASSEMBLY	83 110 70
25		KNOB ASSEMBLY	83 110 85
26		NOT USED	
27		AIR FLOW PROBE	83 100 62
28		NOT USED	
29		CABLE ASSY, AC HARNESS TO CONT	83 100 48

Change 2

TABLE 6.16: SHELL ASSEMBLY, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
30		CABLE ASSY, INCBR MOTOR TO CONT	83 100 53
31		CABLE ASSY, SENSOR MDL TO CONTR	83 100 49
32		SCR, 8-32X5/16 TR PH SS	99 031 05
33		SCR, 8-32X1/2, TR PH SS NYLOK	99 031 99
34		FERRITE SUPPRESSOR, 0.281 DIA	17 585 60
35		SCREW, PNL, 8-32 X 0.94 LG SS	83 100 59
36		NOT USED	
37		SCR,10-32X5/16 TR PH SS NYLOK	99 040 91
38		SCR,10-32X1/2 PN PH SS NYLOK	99 042 05
39		SCR,10-32X3/4 PH SS NYLOK	99 042 08
41		SCR,1/4-20 X 1/2 TR PH S Z1 NYLOK	99 055 96
45		WSHR,LK,INT,#8 SS	99 122 92
46		NUT, HEX, 6-32 KEPS S ZI	99 105 34
47		NOT USED	
48		NOT USED	
49		PLATE, MTG., HALL EFFECT	83 100 09
50		WSHR, FL, .516ID .88OD .010T NYL	99 127 79
51		RET. RING SS WAL 5133-50	99 182 61
52		TAPE, PIPE JNT SEAL, TEFLON, .50"	99 900 26
53		SPRING, FORMED, HUMIDITY DOOR	83 100 42
54		GROUND SYMBOL LABEL	68 212 05
55		O-RING, 1/8 X 1/4 X 1/6 NPRN	99 160 08
56		SCR, 6-32X1/4 PN PH SS, SEMS EX	99 022 83
57		SCR, 4-40X1/4 TR PH SS NYLOK	99 010 67
58		SWITCH, SPST, NC, MAGNETIC REED	17 683 51
59		NOT USED	
60		NUT, HEX, 5/8-18, NYLON	99 114 30
61		NOT USED	
62		LOCTITE, SCREWLOCK NO.222	AR
63		WSHR, FL,.150ID .31OD .06T NYL	99 122 04
64		BEAD CHAIN ASSY	83 100 65
65		CLIP, CORD RETAINING	17 725 44
66		PLUG,7/16-14 UNC-2A	83 100 43
67		WSHR, FL, .536ID, 1.50OD, .05T SS	99 127 78
68		NUT, WING, 7/16-14 UNC-2B,NYLON	83 100 44

Change 2

TABLE 6.17: CONTROLLER ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		CONTROLLER ASSEMBLY, LCD 120V	83 006 70
		CONTROLLER ASSEMBLY EL 120V	83 006 71
		CONTROLLER ASSEMBLY, LCD 220V	83 006 80
		CONTROLLER ASSEMBLY EL 220V	83 006 81
		CONTROLLER ASSEMBLY, LCD, 100V	83 006 90
		POWER BOARD 120V	99 13762 0
1		POWER BOARD 220V	99 13763 0
2		COMPUTER BOARD 120V	99 13758 0
		COMPUTER BOARD 220V	99 13759 0
3		DISPLAY BOARD EL	99 13754 0
		DISPLAY BOARD LCD	99 13756 0
4		LCD DISPLAY	08 13004 0
		EL DISPLAY	08 13000 0
5		FUSES–120V 5A/250V	18 13088 0
		FUSES–220V 2.5/250V	18 13089 0
6		SONA-ALERT	99 13189 0
7		SPEAKER	99 13188 0
8		FAN 38 X 38 MM 12 VDC	54 13028 0
		FAN 52 X 52 MM 24 VDC	54 13172 0
9		RIBBON CABLE 20 POSITION	99 13114 0
10		RIBBON CABLE 34 POSITION	99 13115 0
11		AC POWER CONNECTOR	99 13187 0
12		ON/OFF SWITCH	99 13186 0
13		FRONT PANEL OVERLAY EL	83 006 10
		FRONT PANEL OVERLAY LCD	83 006 20
14		U-SHAPED GROUND CONNECTOR	16 13094 0

Change 2

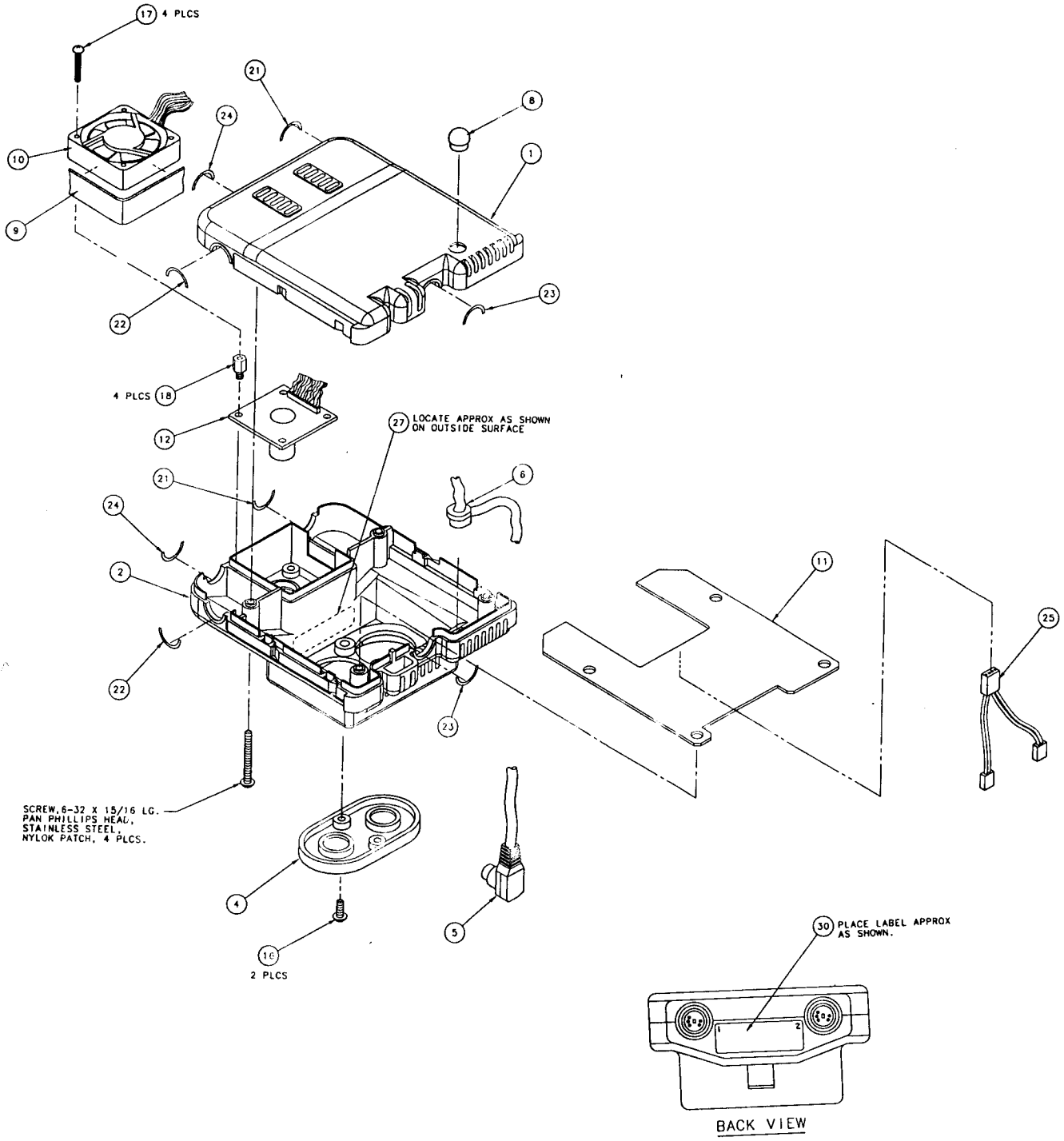


FIGURE 6.18: PARTS LOCATION DIAGRAM, SENSOR MODULE ASSEMBLY (SHEET 1 OF 1)

Change 2

TABLE 6.18: SENSOR MODULE ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		SENSOR MODULE ASSEMBLY	83 005 50
1		TOP COVER, SENSOR MODULE	83 005 51
2		BOTTOM COVER, SENSOR MODULE	83 005 52
3		NOT USED	
4		PLATE, W/O O_2, SENSOR MODULE	83 005 55
		PLATE WITH OXYGEN (OPTIONAL NOT SHOWN)	83 620 45
		FUEL CELL (OPTIONAL NOT SHOWN)	83 620 30
5		CABLE ASSY, SENSOR MODULE	83 005 30
6		STRAIN RLF, RGHT ANG, .250 DIA	17 735 65
7		NOT USED	
8		LENS, LED, WHITE, SENSOR MODULE	83 005 32
9		GASKET, FAN, NEOPRENE, .06 THK	83 005 36
10		FAN ASSY, 40 MM SQ, 10 MM T 5.5 CFM	83 005 40
11		PCB1 ASSEMBLY, SENSOR MODULE	83 005 70
12		PCB1 ASSY, THERMISTOR BOARD	83 015 70
13 THRU 15		NOT USED	
16		SCR, 6-32X1/2, FL PH SS	99 023 94
17		SCR, 4-40X9/16 PN PH SS NYLOK	99 011 77
18		STANDOFF,4-40,.38 L,.25 HX, MF,AL	99 116 26
19 AND 20		NOT USED	
21		LABEL, IDENT., SKIN TEMP PROBE	83 005 56
22		LABEL, IDENT., SCALE	83 005 57
23		LABEL, IDENT., ULTRA-LITE	83 005 58
24		LABEL, IDENT., SKIN TEMP PROBE	83 005 54
25		CABLE ASSY, O_2 CELL	83 005 34
30		PROBE ID LABEL	83 500 49

Change 2

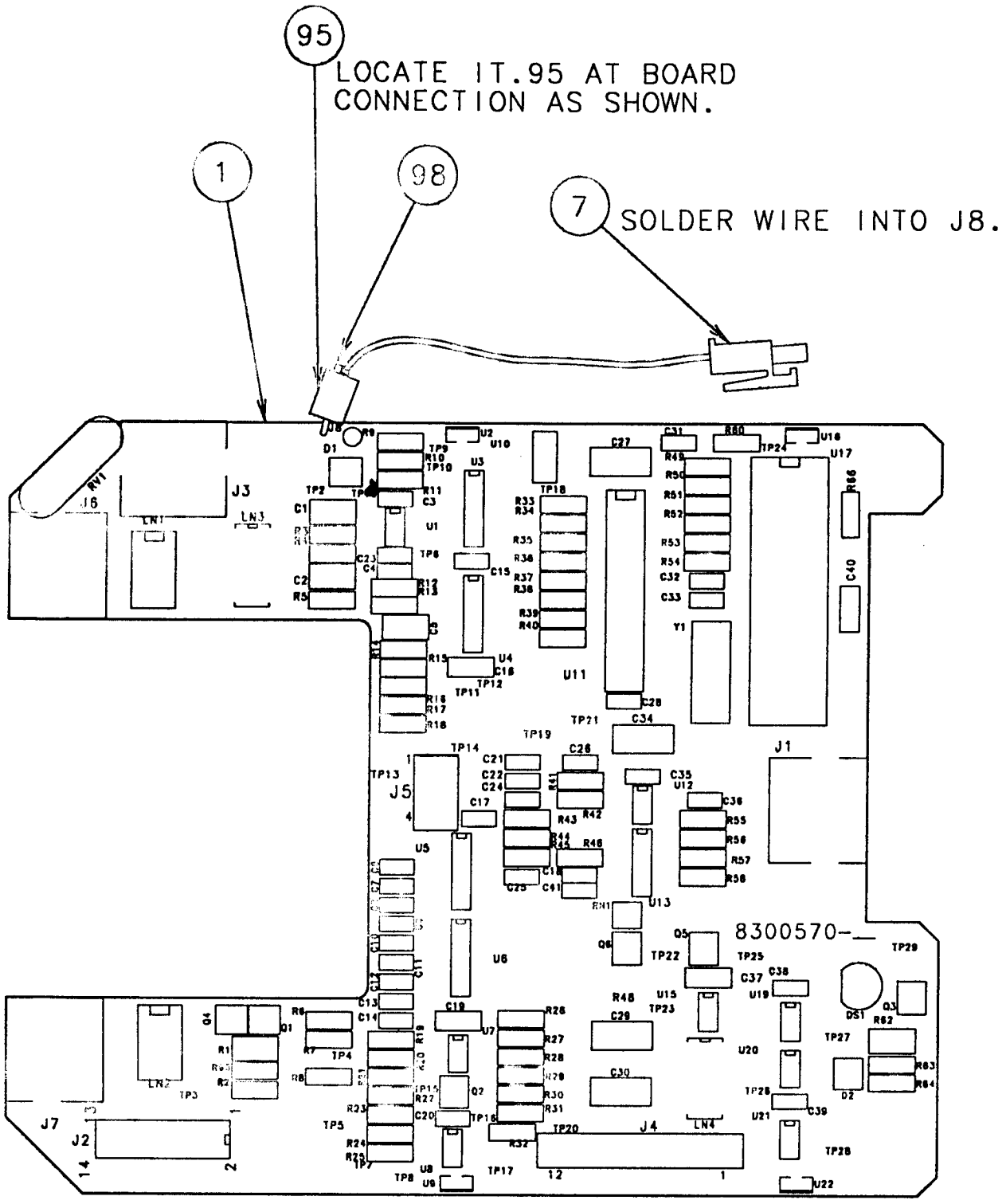


FIGURE 6.19: PARTS LOCATION DIAGRAM, SENSOR MODULE MAIN BOARD (SHEET 1 OF 1)

Change 2

TABLE 6.19: SENSOR MODULE PCB1 MAIN BOARD, PARTS LIST

(Sheet 1 of 4)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		PCB1 MAIN BOARD ASSEMBLY	83 005 70
1		NOT USED	
2		NOT USED	
3		NOT USED	
4		NOT USED	
5		NOT USED	
6		NOT USED	
7		CABLE ASSY, SENSOR MODULE BOARD	83 005 26
8 THRU 10		NOT USED	
11	C3,4,14,15,17, 18, 23,28,35,36 38,39,41	CAP, 0.1 uF, ± 10%, 50V, CER KEMET, C0805C104K5RAC3972-X	TBA
12	C27,29,30,34	CAP, 10 uF, ± 20%, 20V, CER TOKIN, C25U5U1E1106ZF	TBA
13	C16,19,37,40	CAP, 1.0 uF, +80/-20%, 16V, CER TDK, CC1206CY5V105Z	TBA
14	C20,32,33	CAP, 33 PF, ± 10%, 50V, CER KEMET, C0805C330K5RAC3972-X	TBA
15	C6,7,8,9,10,11,12, 13,21,22,24,25,31	CAP, 0.01 uF, ± 10%, 50V, CER KEMET, C0805C103K5RAC3972-X	TBA
16	C5	CAP, 0.220 uF, ± 10%, 50V, CER KEMET, C1210C224K5RAC3972-X	TBA
17	C1,2	CAP, 0.330 uF, ± 10%, 50V, CER KEMET, C1210C334K5RAC3972-X	TBA
18	C26	CAP, 0.001 uF, ± 10%, 50V, CER KEMET, C0805C102K5RAC3972-X	TBA
19 AND 20		NOT USED	
21	J1	CONN, PC HDR, 3 PSN, RT ANG, MINI-DIN HIRSHAM RAS/PCB-3 927710-110	TBA
22	J2	CONN, PC HDR, DIL, M, VERT, SMT, 14 PSN SAMTEC, TSM-107-01-S-DV-LC	TBA
23	J3	CONN, PC HDR, 7 PSN, RT ANG, MINI-DIN PAN INTERNATIONAL, 70380-E07	TBA
24	J4	CONN, PC HDR, M, VERT, SIL, 12 PSN HIROSE, DF3A-12P-2DSA	TBA
25	J5	CONN, RCPT, MALE, SGL, LKG, PC, 4 PSN MP, 640456-4	TBA
26		NOT USED	

Change 2

TABLE 6.19: SENSOR MODULE PCB1 MAIN BOARD, PARTS LIST

(Sheet 2 of 4)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
27	J6,7	CONN, PC HDR, 5 PSN, RT ANG, MINI-DIN PAN INTERNATIONAL, 70380-405	TBA
28	Y1	CRYSTAL, 4.000 MHZ, EPSON, MA-506-4.00 MHZ	TBA
29	D1,2	DIODE, 0.2A, 100V, MOTOROLA, MMBD914LT1	TBA
30	U1,U12	IC, OP-AMP, TEXAS INSTR, TLC2272CD	TBA
31	LN3,4	INDUCTOR NTWK, 8 DIP, TDK, ZBDS5101-8PT	TBA
32	LN1,2	INDUCTOR NTWK, 4 DIP, TOKIN, M-540C	TBA
33	U20	IC, VOLT REF, 5.00V, LINEAR TECH, LT1021DCS8-5	TBA
34	U21,19	IC, VOLT REG, 5.0V, 0.1 mA, MOTOROLA, MC78L05ACD	TBA
35	U15	IC, VOLT REG, -5V, 0.1mA, MOTOROLA MC79L05ACD	TBA
36	U18	IC, OPTOCOUPLER, SIEMENS, 4N35-009	TBA
37	U2,9,16, 22	IC, HALL-EFFECT SENSOR, ALLEGRO, UGN-3142EU	TBA
38		FIRMWARE, SENSOR MODULE	83 005 25
39	U3	IC, DUAL 4 TO 1 DATA SELECTOR MOTOROLA, MC74HC253D	TBA
40	U17	IC, u-CONTROLLER, 8 BIT MICRO CHIP, PIC16C73-04-/P	TBA
41	U13,14	IC, DUAL LINE DRIVER, OPEN COLLECTOR TEXAS INSTRUMENTS, SN75462	TBA
42	U11	IC, ADC, 12 BIT, W/8 IN MUX, SER OUT LINEAR TECH, LTC1290DCN	TBA
43	U10	IC RESET DALLAS SEMI-CONDUCTOR, DS1233Z-5	TBA
44	U8	IC, COMPARATOR LINEAR TECH, LT1018CS8	TBA
45	U4,5,6	IC, 1 OF 8, ANALOG MUX MOTOROLA, MC14051BD	TBA
46		IC, SOCKET, SMT, 28 PIN, .30" WIDE, DIL AMP, 2-382636-3	TBA
47	U7	IC, COMPARATOR MAXIM, MAX942CSA	TBA
48	DS1	LAMP, LED, ROUND, RED HEWLETT-PACKARD, HLMP-8100	TBA
49	R16	RES, 49.9Ω, ± 0.1%, 1/8W, CRBN FILM DALE, TNPW120649R9-BT-9	TBA

Change 2

TABLE 6.19: SENSOR MODULE PCB1 MAIN BOARD, PARTS LIST

(Sheet 3 of 4)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
50	R15,26,45	RES, 3.32K, ± 0.1%, 1/8W, CRBN FILM DALE, TNPW12063321BT-9	TBA
51	R21,42	RES, 4.75K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12064751FT-X	TBA
52	R23,24,43	RES, 5.62K, ± 0.1%, 1/8W, CRBN FILM DALE, TNPW12065621BT-9	TBA
53	R13	RES, 75.0K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12067502FT-X	TBA
54	R14	RES, 9.09K, ± 0.1%, 1/8W, CRBN FILM DALE, TNPW12069091BT-9	TBA
55	R12	RES, 47.5K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12064752FT-X	TBA
56		NOT USED	
57		NOT USED	
58	R7,31,33,34, 35,36,37,38, 39,40,47,49, 57	RES, 1.00K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12061001FT-X	TBA
59 THRU 65		NOT USED	
66	R3,4,6,8,9, 10,17,18,25, 27,50,51,52, 53,54,55,58, 59,60,63,64, 65	RES, 10.0K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12061002FT-X	TBA
67		NOT USED	
68	R2,5,46	RES, 100K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12061003FT-X	TBA
69		NOT USED	
70	R29,32	RES, 24.9K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12062492FT-X	TBA
71		NOT USED	
72	R30	RES, 30.1K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12063012FT-X	TBA
73		NOT USED	
74	R19,28	RES, 2.10K, ± 1%, 1/8W, CRBN FILM DALE, CRCE12062101FT-X	TBA
75		RES, 150 ± 1%, 1/8w FILM	TBA
76 AND 77		NOT USED	
78	R56	RES, 3.32Ω, ± 1%, 1/8W, CRBN FILM KOA, RK73H2B3R32BT	TBA

Change 2

TABLE 6.19: SENSOR MODULE PCB1 MAIN BOARD, PARTS LIST

(Sheet 4 of 4)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
79 THRU 81		NOT USED	
82	R20	RES, 82.5K, ± 0.1%, 1/8W, ± 15PPM FILM DALE, TNPW12068252BT-10	TBA
82 THRU 87		NOT USED	
88	R11	RES, 332K, ± 1.0%, 1/8W, ± 15PPM FILM DALE, CRWC12063323FT-X	TBA
89		NOT USED	
90	R41	RES, 287K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12062873FT-X	TBA
91	R44	RES, 10.0K, ± 0.1%, 1/8W, CRBN FILM DALE, TNPW12061002BT-9	TBA
92	R1	RES, 10.0, ± 1%, 1/4W, CRBN FILM DALE, CRCW121010R0FT-X	TBA
93		NOT USED	
94	R22	RES, 1.21K, ± 1%, 1/8W, CRBN FILM DALE, CRCW12061211FT-X	TBA
95		FERRITE, STEWARD, 28A0392-OAO	TBA
96		RES, 499Ω, ± 1%, 1/4W, CRBN FILM DALE, CRCW12104990FT-X	TBA
97		VARISTOR, 10 MM 250V HARRIS SEMICONDCUCTOR V275LH20A	17 AN 693
98		WIRE TIE 4.50 LG	TBA
99 THRU 101		NOT USED	
102	Q1.2.3.4	TRANSISTOR, FET, N-CHANNEL ZTEX, BSS-128	TBA
103		TRANSISTOR, NPN SIGNAL LITE-ON, MMBT2222A	TBA
104		NOT USED	

Change 2

TABLE 6.20: PEDESTAL STAND ASSEMBLY SERIES 00, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		Pedestal Stand Assembly, 120 V	83 420 70
		Pedestal Stand Assembly, 240 V	83 420 80
1 THRU 5		NOT USED	
6		PLATE, TRANSITION, TOP	83 900 50
7		NOT USED	
8		COLUMN, UPPER VHA	83 400 03
9		CABLE ASSY, AC TOP	83 420 18
10		LEG, BASE, MACHINING	83 400 01
11		CASTER, SWIVEL,5.00 DIA,W/0 BK	83 400 02
12		CASTER,SWIVEL, 5.00 DIA,W/BK	83 400 09
13		NOT USED	
14		BUSHING,SHLDR,PLSTC,1.25ID	78 265 15
15		NOT USED	
16		PLATE,TRANSITION,BOTTOM	83 400 15
17		EXTRUSION,COLUMN,WELDMENT	83 420 00
18		NOT USED	
19		CABLE ASSY,AC PWR CORD,GRA,15A	17 AZ 205
		CABLE ASSY,AC PWR CORD,VDE,GRA,15A	17 AZ 207
20		NOT USED	
21		STRAIN RLF,STR,ADJ UP TO .400D	17 733 88
22		CKT BRKR,DPST/SF 15.0A 250/28V	17 BH 213
23		CLAMP,CABLE,LOOP TY,NYL,.25ID	17 062 26
24 THRU 31		NOT USED	
32		SCR,6-32X3/8 TR PH SS NYLOK	99 023 51
33 AND 34		NOT USED	
35		SCR,8-32X3/8 TR PH SS NYLOK	99 031 52
36 AND 37		NOT USED	
38		SCR,10-32X3/8 CP HX SS	99 041 29
39 AND 40		NOT USED	
41		SCR,1/4-20X7/8 TR PH SS NYLOK	99 057 33
42		LABEL,WARNING,WHEEL LOCK LOCAT	83 500 15
43 THRU 47		NOT USED	
48		LOCTITE #242	99 901 77
49		NUT,HEX,6-32 KEPS S ZI	99 105 34
50		SCR,1/4-20X1/2 CP SK SS	99 055 77

Change 2

TABLE 6.20: PEDESTAL STAND ASSEMBLY, SERIES 00, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
51		WSHR,LK,EXT,#8 SS	99 122 93
52		WSHR,LK,EXT,#10 SS	99 123 94
53		WSHR,LK,EXT,1/4 SS	99 125 71
54		WSHR,LK,INT,1/4 SS	99 125 54
55		LABEL,GROUND SYMBOL,PROTECTIVE	68 212 00
56		LABEL,GROUND SYMBOL,FUNCTIONAL	68 212 05
57		LABEL,STAND BASE,ENG THRU ITL	83 500 10
58		LABEL,DATA TAG, ISOLETTE NON-CE	83 500 41
		LABEL,DATA TAG, ISOLETTE CE MARK	83 500 40
59		MODEL/SERIES NO LOG, PED STAND	83 995 02
60		LABEL,SHOCK HAZARD	83 500 39
61		LABEL,MANUAL REFERENCE SYMBOL	68 160 05
62		SCR,6-32X5/16 TR PH SS NYLOK	99 023 03
63		CLEAT,POWER CORD	83 400 19
64		LABEL, AUX. OUTLET,120V	83 500 20
		LABEL, AUX. OUTLET, 220-240 V	83 500 21
65		BAG, CLOTH, 5x7	99 900 54
66		SCR, 1/4-20 X 1.75 CP, HX, SS, NYLOK	99 059 11
67		SHIPPING PACK,COMPL.,FIX STAND	83 920 10

Change 2

TABLE 6.21: PEDESTAL STAND ASSEMBLY, SERIES 01 AND HIGHER, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		Pedestal Stand Assembly, 120 V	83 420 70
		Pedestal Stand Assembly, 240 V	83 420 80
		Pedestal Stand Assembly, 100 V	83 420 90
1 THRU 5		NOT USED	
6		PLATE, TRANSITION, TOP	83 401 02
7 AND 8		NOT USED	
9		CABLE ASSY, AC TOP	83 420 19
10		LEG, BASE, MACHINING	83 400 01
11		NOT USED	
12		CASTER,SWIVEL, 5.00 DIA,W/BK	83 400 09
13 THRU 18		NOT USED	
19		CABLE ASSY,AC PWR CORD,GRA,15A	17 AZ 205
		CABLE ASSY,AC PWR CORD,VDE,GRA,15A	17 AZ 207
20		NOT USED	
21		STRAIN RLF,STR,ADJ UP TO .400D	17 733 88
22		CKT BRKR,DPST/SF 15.0A 250/28V	17 BH 213
23		CLAMP,CABLE,LOOP TY,NYL,.25ID	17 734 01
24 THRU 31		NOT USED	
32		SCR,6-32X3/8 TR PH SS NYLOK	99 023 51
33 THRU 40		NOT USED	
41		NOT USED	
42		LABEL,WARNING,WHEEL LOCK LOCAT	83 500 15
43 THRU 47		NOT USED	
48		LOCTITE #242	AR
49		NUT,HEX,6-32 KEPS S Z1	99 150 34
50		SCR,1/4-20X3/8 CP SK SS	99 056 95
51		HEX NUT, KEPS 6 -32 SM PATT	99 105 71

Change 2

TABLE 6.21: PEDESTAL STAND ASSEMBLY, SERIES 01 AND HIGHER, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
54		WSHR,LK,INT,1/4 SS	99 125 54
55		LABEL,GROUND SYMBOL,PROTECTIVE	68 212 00
56		NOT USED	
57		LABEL,STAND BASE,ENG THRU ITL	83 500 10
60		LABEL,SHOCK HAZARD	83 500 39
61		LABEL,MANUAL REFERENCE SYMBOL	83 500 34
62		SCR,6-32X5/16 TR PH SS NYLOK	99 023 03
63		CLEAT,POWER CORD	83 400 19
64		LABEL, AUX. OUTLET,120V	83 500 20
		LABEL, AUX. OUTLET, 220-240 V	83 500 21
66		SCR, 1/4-20 X 1.50 CP, HX, SS, NYLOK	99 058 80
68		LINE FILTER 115-250 VAC 220V ONLY	17 585 38
69		CABLE ASSY, CONT PWR, VDE FIXED	17 AZ 208
70		GROUND LEAD	83 400 51
71		FERRITE SUPPRESSOR 0.280 ID	17 585 60
72		LOCK WASHER, SP 1/4 SS	99 125 53
73		COLUMN, WELDMENT, 17LG	83 420 01
		COLUMN, WELDMENT, 14.75LG	83 420 02
75		LABEL, UL/CUL	83 500 44
76		NUT, 1/4 - 20 ES SS	99 109 27
77		SCREW, 1/4 - 20 3.50 CP HX S	99 060 75

Change 2

TABLE 6.22: PEDESTAL STAND ASSEMBLY, VHA, PARTS LIST

(Sheet 1 of 3)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		Pedestal Stand Assembly, 120 V	83 400 70
		Pedestal Stand Assembly, 240 V	83 400 80
		Pedestal Stand Assembly, 100 V	83 400 90
1		NOT USED	
2		FOOT SWITCH ASSY, FRONT	83 401 50
3		FOOT SWITCH ASSY, REAR	83 401 55
4 AND 5		NOT USED	
6		PLATE, TRANSITION, TOP	83 401 02
7		COLUMN, LOWER VHA	83 400 04
8		COLUMN, UPPER VHA	83 400 03
9		CABLE ASSY, AC TOP, VHA	83 400 18
10		LEG, BASE, MACHINING	83 400 01
11		NOT USED	
12		CASTER, SWIVEL, 5.00 DIA, W/BK	83 400 09
13		NOT USED	
14		NOT USED	
15		NOT USED	
16		PLATE, TRANSITION, BOTTOM	83 400 15
17		ACTUATOR, 100 AND120V	83 400 20
		ACTUATOR, 220V	83 400 21
18		NOT USED	
19		CABLE ASSY, AC PWR CORD, GRA,15A 100 AND 120V	17 AZ2 05
		CABLE ASSY, AC PWR, VDE, GRA,15A 220V	17 AZ2 07
20		CABLE ASSY, CONT PWR VDE VHA	17 AZ 206
21		STRAIN RLF, STR, ADJ UP TO .400D	17 733 88
22		CKT BRKR, DPST/SF 15.0A 250/28V	17 BH 213
23		CLAMP, CABLE, LOOP TY, NYL,.25ID	17 734 01
24		LINE FILTER, 115–250 VAC	17 585 38
25 THRU 30		NOT USED	
31		SCR, 6–32X5/16 TR PH SS NYLOK	99 023 03
32		SCR, 6–32X3/8 TR PH SS NYLOK	99 023 51
33		NOT USED	
34		SCR, 6–32X1.12 TR PH SS NYLOK	99 025 44
35		SCR, 8–32X3/8 TR PH SS NYLOK	99 031 52

Change 2

TABLE 6.22: PEDESTAL STAND ASSEMBLY, VHA, PARTS LIST

(Sheet 2 of 3)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
36 AND 37		NOT USED	
38		NOT USED	
39		SCR, 1/4 - 20 X 1.25 CP HX SS	99 041 29
40		NOT USED	
41		NOT USED	
42 THRU 44		NOT USED	
45		SCR, M6X1.0X25LG,CP SK SS	99 998 76
46 AND 47		NOT USED	
48		LOCTITE #242	AR
49		NUT, HEX, 6-32 KEPS S ZI	99 105 34
50		SPACER, 0.14ID 0.38 OD 0.88 LG NYL	99 122 52
51		HEX NUT, 6 - 32 KEPS S Z1 SM PATT	99 105 71
52 THRU 54		NOT USED	
55		WSHR, LK, EXT, #8 SS	99 122 93
56		WSHR, LK, EXT,#10 S4	99 123 95
57		WSHR, LK, EXT, 1/4 SS	99 125 71
58		WSHR, LK, INT,1/4 SS	99 125 54
59 AND 60		NOT USED	
61		CABLE ASSY, BRKR,17" WHT/BRN	83 400 36
62		CABLE ASSY, BRKR,17" WHT/BLU	83 400 37
63 THRU 68		NOT USED	
69		CABLE ASSY, BRKR,17" WHT/BLU	83 400 45
70		GROUND LEAD	83 400 51
71		CABLE ASSY, GND,14" GRN/YEL	83 400 50
72		CABLE ASSY, MTR TO FS,17", ORN	83 400 62
73		CABLE ASSY, MTR TO FS,17", RED	83 400 61
74		NOT USED	
75		LABEL, GROUND SYMBOL, PROTECTIVE	68 212 00
76		NOT USED	
77		LABEL, STAND BASE, ENG THRU ITL	83 500 10
79		NOT USED	
80		LABEL, SHOCK HAZARD	83 500 39
81		LABEL, MANUAL REFERENCE SYMBOL	68 160 05
82		WIRE TIE (4.50 LG)	12 995 00
83		MOUNT CABLE TIE, ADHESIVE BACK	17 063 14

Change 2

TABLE 6.22: PEDESTAL STAND ASSEMBLY, VHA, PARTS LIST

(Sheet 3 of 3)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
84		NOT USED	
85		CLEAT, POWER CORD	83 400 19
86		SCR,6-32X7/16 TR PH SS NYLOK	99 023 64
87		LABEL, AUX. OUTLET,120V	83 500 20
		LABEL, AUX. OUTLET,220 V-240 V	83 500 21
		LABEL, AUX. OUTLET, 100 V	83 500 24
88		NOT USED	
89		SCR,1/4-20X1.50 CP HX SS NYLOK	99 058 80
90		SHIPPING PACK, COMPL., VHA STAND	83 920 11
91		FERRITE SUPPRESSOR 0.280 ID	17 585 60
92		LOCK WASHER SP 1/4 SS	99 125 53
93		NOT USED	
94		LABEL, UL/CUL	83 500 44
95		NUT, 1/4 - 20 ES SS	99 109 27
96		SCREW, 1/4 - 20 3.50 CP HX S Z1	99 060 74

Change 2

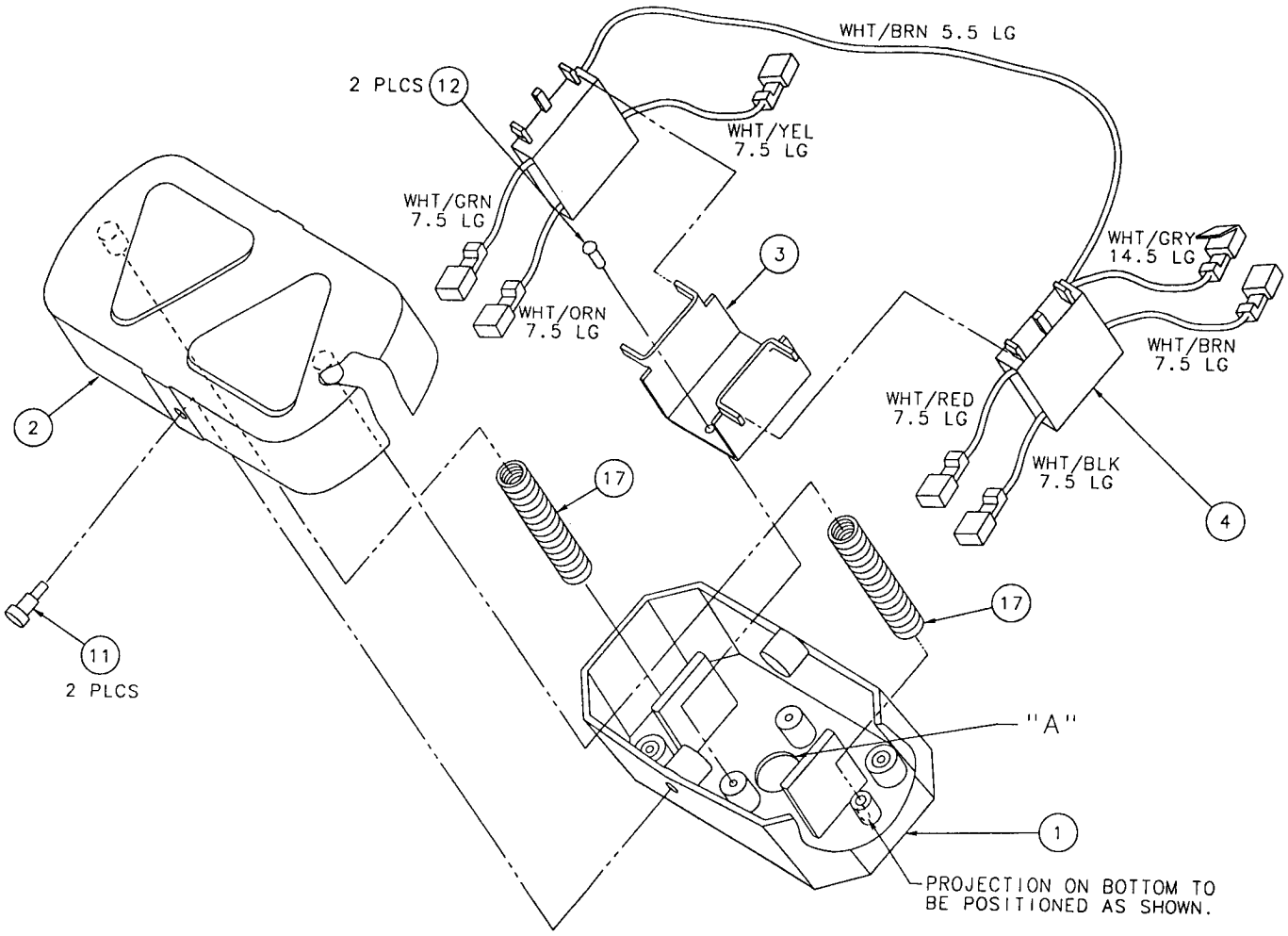


FIGURE 6.23: PARTS LOCATION DIAGRAM, FOOT SWITCH ASSEMBLY, FRONT

TABLE 6.23: FOOT SWITCH ASSEMBLY, FRONT, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		FOOT SWITCH ASSEMBLY, FRONT	83 401 50
1		HOUSING, FOOT SWITCH	83 400 12
2		COVER, FOOT SWITCH	83 400 11
3		BRACKET, SWITCH RETAINER	83 400 07
4		WIRING ASSY FOOT SW FRONT	83 401 40
5 THRU 10		NOT USED	
11		SCR, SHLDR, .187D .25L,8-32,NYLK	99 195 03
12		SCR,4-40X1/4 TR PH SS NYLOK	99 010 67
13 THRU 16		NOT USED	
17		SPRING, CPRS, .42OD .051W 2.50LG	83 400 08

Change 2

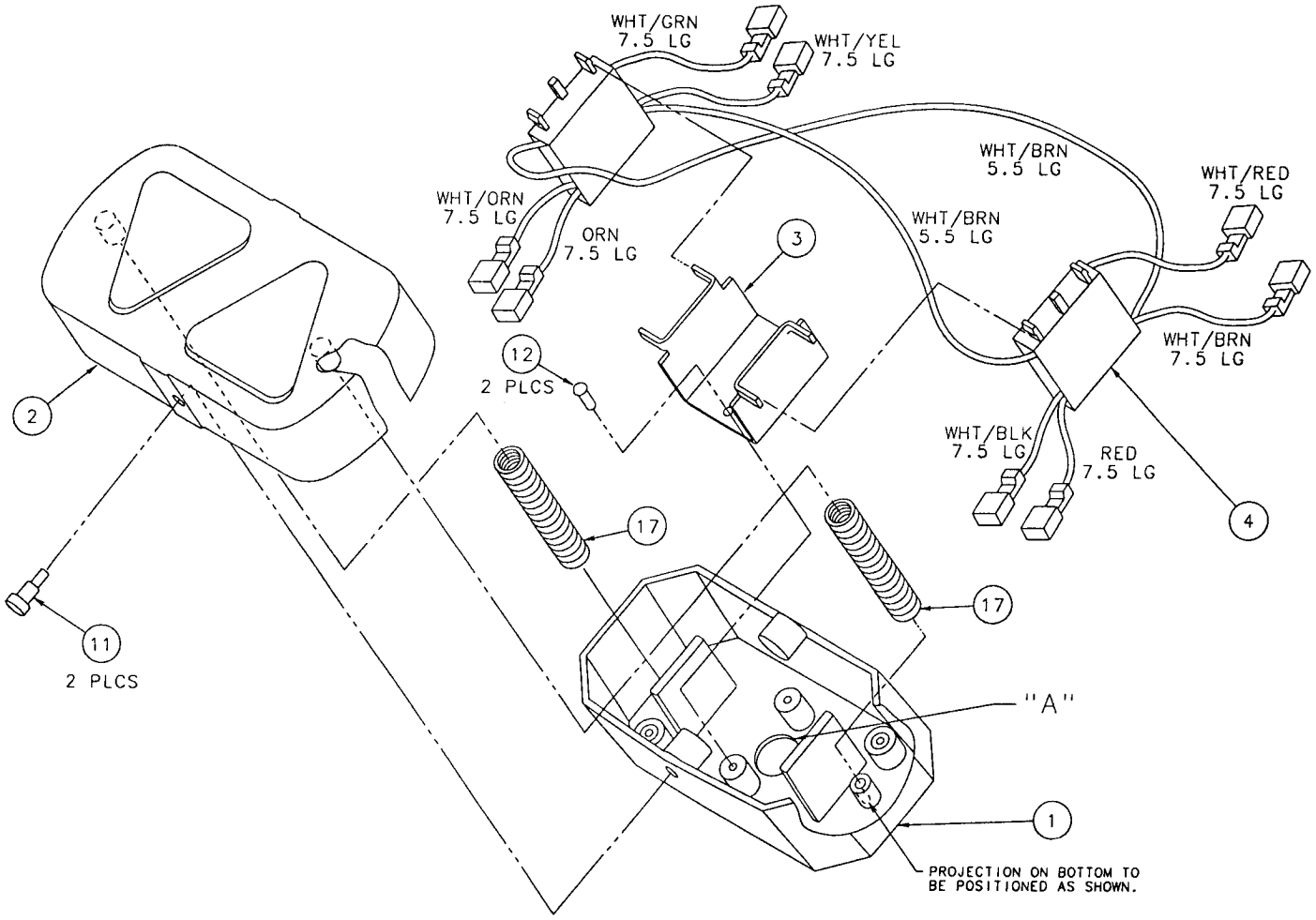


FIGURE 6.24: PARTS LOCATION DIAGRAM, FOOT SWITCH ASSEMBLY, REAR

TABLE 6.24: FOOT SWITCH ASSEMBLY, REAR, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		FOOT SWITCH ASSEMBLY, REAR	83 401 55
1		HOUSING, FOOT SWITCH	83 400 12
2		COVER, FOOT SWITCH	83 400 11
3		BRACKET, SWITCH RETAINER	83 400 07
4		WIRING ASSY FOOT SW REAR	83 401 45
5 THRU 10		NOT USED	
11		SCR, SHLDR, .187D .25L, 8-32, NYLK9	9 9195 03
12		SCR, 4-40X1/4 TR PH SS NYLOK	99 010 67
13 THRU 16		NOT USED	
17		SPRING, CPRS, .42OD .051W 2.50LG	83 400 08

Change 2

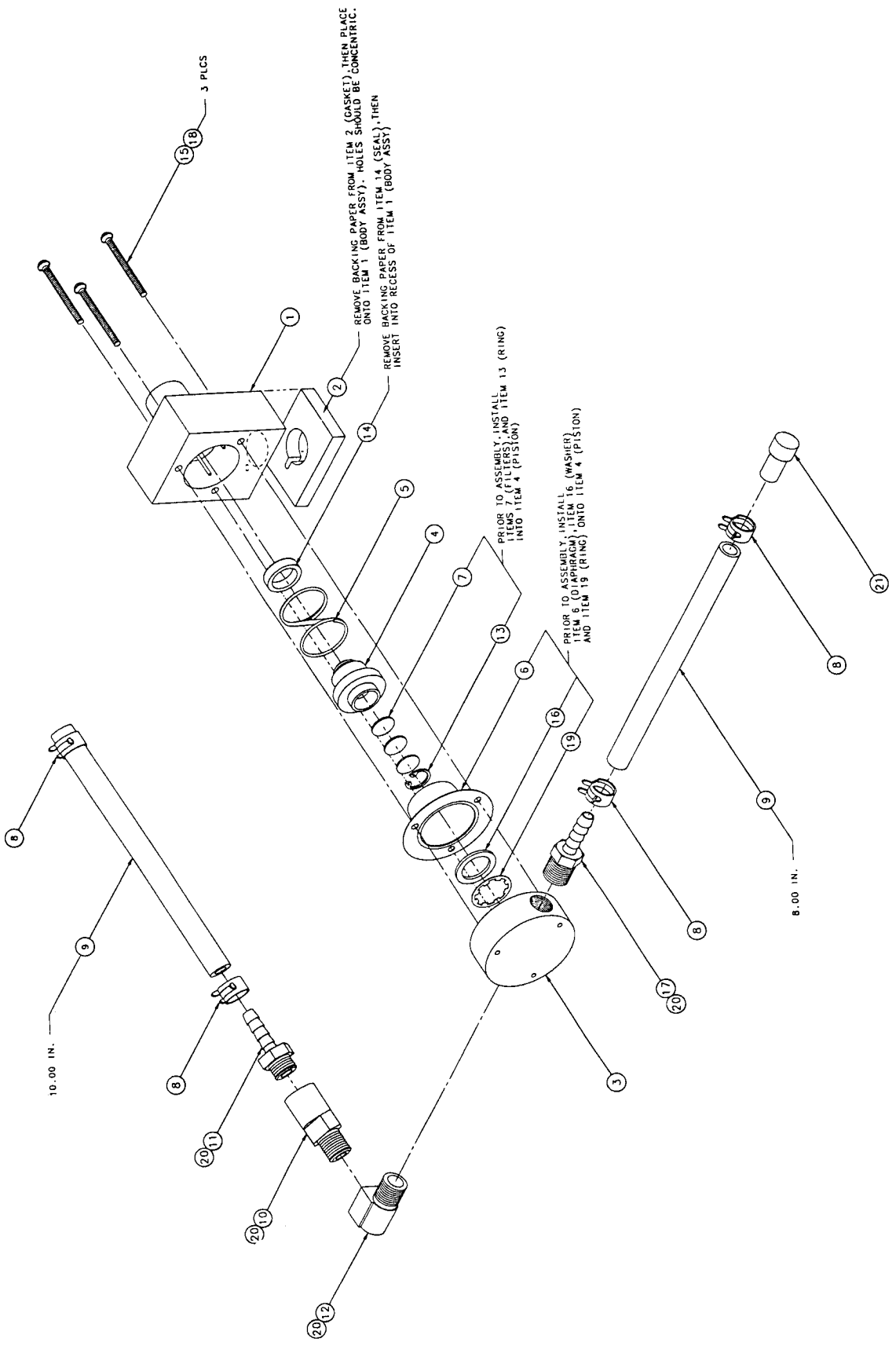

3 PLCS
REMOVE BACKING PAPER FROM ITEM 2 (GASKET), THEN PLACE ONTO ITEM 1 (BODY ASSY). HOLES SHOULD BE CONCENTRIC.
REMOVE BACKING PAPER FROM ITEM 14 (SEAL), THEN INSERT INTO RECESS OF ITEM 1 (BODY ASSY)
PRIOR TO ASSEMBLY, INSTALL ITEMS 7 (FILTERS), AND ITEM 13 (RING) INTO ITEM 4 (PISTON)
PRIOR TO ASSEMBLY, INSTALL ITEM 6 (DIAPHRAGM), ITEM 16 (WASHER) AND ITEM 19 (RING) ONTO ITEM 4 (PISTON)
10.00 IN.
8.00 IN.

FIGURE 6.25: PARTS LOCATION DIAGRAM, CHECK VALVE ASSEMBLY (SHEET 1 OF 1)

Change 2

TABLE 6.27: SCALE BOARD ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		SCALE BOARD ASSEMBLY	83 600 70
6	PSW1,PSW2	POLYSWITCH, RAYCHEM RXE10,100MA	
7		IC PCN REF 5.0V LT1'021CCN8-5	17 633 94
8		DS1233-5	
10	CR1,2,3,4,5	DIODE, 1N914A	17 AR 501
11	PSW3	POLYSWITCH, RAYCHEM RXE10,200MA	
12	C1,3,5,13,14,16,18 27,29,31	CAP 1.00 UF 10% 50V METPYLEST	17 AY 652
13	C2,4,6-11,21-24 26,28,30,32	CAP 0.1 UF 10% 50V METPYLEST	17 AY 646
14	C12,33	CAP 0.01 UF 10% 63V METPYLEST	17 AY 640
15	C15	CAP 0.22 UF 10% 50V METPYLEST	17 AY 648
16	C17	CAP 0.47 UF 10% 50V METPYLEST	17 AY 650
17	C19,20	CAP 20 PF 10% 1KV CER DISC	17 BF 016
18	R5	RES, 100K, 0.1% 1/8W FILM	17 AG 882
19	J1	CONN, AMP 6 PIN SGL	AMP#03635-5
20	J3	CONN, AMP 16 PIN SGL	AMP#1-103635-5
22	L1,2	COIL MOLDED, AZMER PRECISION INDUS	0925-104H
22	R4	RES, 9.53K, 0.1% 1/8W FILM	17 AF 286
22	R1,2,8,9	RES, 100K, 1% 1/8W FILM	17 AF 384
23	R3,12	RES, 4.75K, 1% 1/8W FILM	17 AF 257
25	R6	RES, 4.22K, 0.1% 1/8W FILM	17 AG 750
26	R7	RES, 26.7 OHM, 1% 1/8W FILM	17 AE 041
27	R10,13	RES, 1.00K, 1% 1/8W FILM	17 AF 192
28	R11	RES, 499K, 1% 1/8W FILM	17 AF 451
29	U1	LINEAR AMPLIFIER, LINEAR TECH	LTC1100CN8
30	U2	OPERATIONAL AMPLIFIER, LINEAR TECH	LTC1050CN8
31	U3	A/D CONVERTER, HARRIS	1CL7135CP1
32	U4	MICROCONTROLLER, MICROCHIP	PIC16C73-04-/P
33	U5	EEPROM	17 633 89
34	U6	VOLTAGE REGULATOR, -5V, 79L05	17 AT 050
35	U7	POWER DRIVER 3633N	17 629 52
36	X1	CRYTAAL, 4MHZ	17 524 14
37	RN1	RESISTOR NETWORK 9 @ 10K 5% 1/8W	17 AU 077
38		IC SOCKET, 8 DIP	17 AP 190
39		IC SOCKET 28 DIP	

Change 2

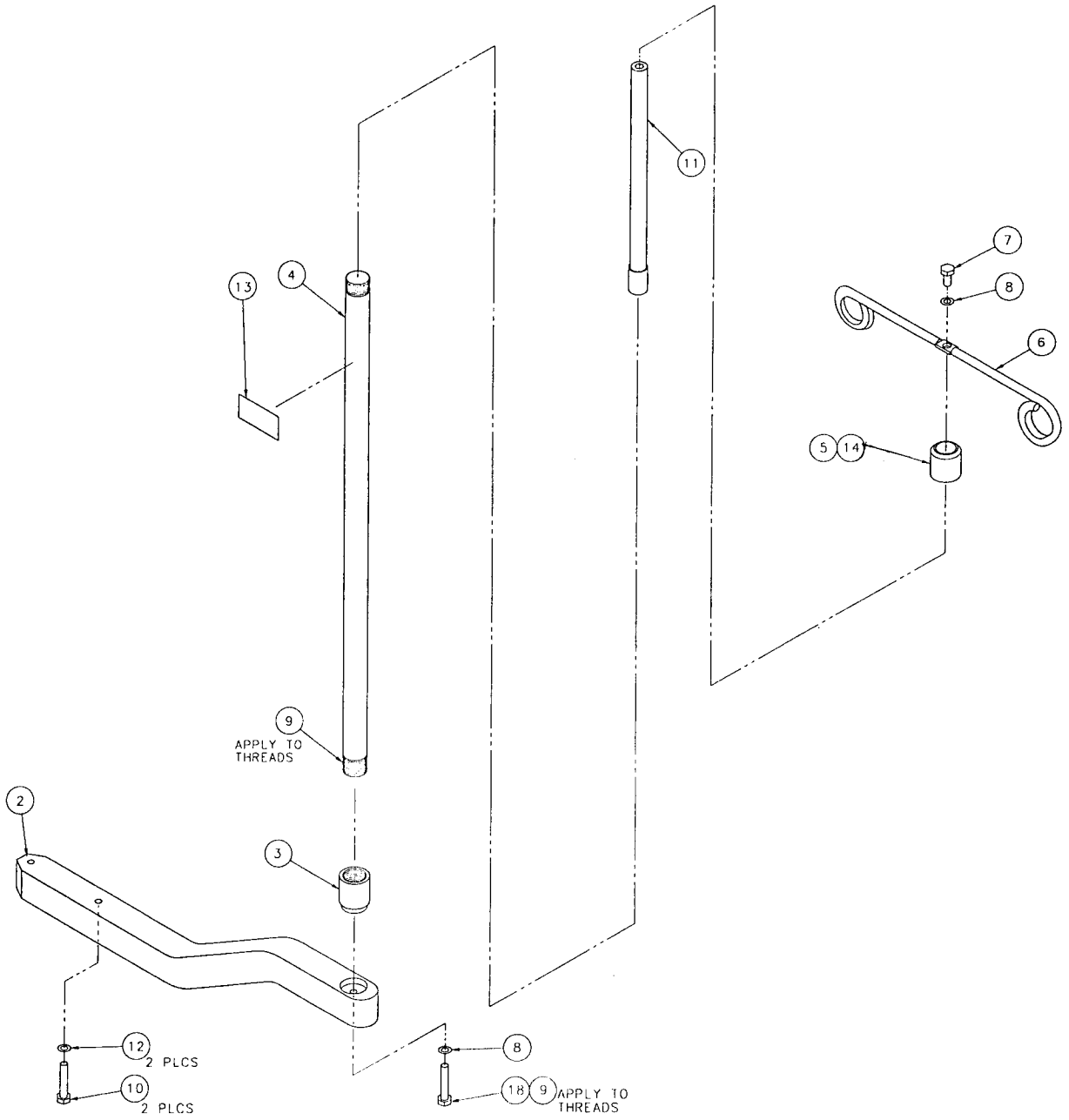


FIGURE 6.28: PARTS LOCATION DIAGRAM, I.V. POLE ASSY ACCESSORY

Change 2

TABLE 6.26: SCALE ASSEMBLY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		SCALE ASSEMBLY	83 600 50
1		BOTTOM TRAY	83 600 51
2		TOP TRAY	83 600 52
3		SCALE SUBFRAME	83 600 53
4		5 KG LOAD BEAM	83 600 55
5		PCB ASSY	83 600 70
6		CABLE ASSY	83 600 30
7		RETAINING CLAMP	83 600 54
8		LOCTITE NO. 222	AR
10		SCREW, 8- 32 X 1/4 TR PH SS	99 030 69
11		NOT USED	
12		NOT USED	
13		NOT USED	
14		PCB SHIELD	83 600 56
15		BAR CODE LABEL	83 500 46
16		NOT USED	
17		SCALE SHIELD	83 600 57
18		SHIELD SPACER	83 600 58
19		TAPE, CONDUCTIVE COPPER, 1.00W	17 063 12
20		SCR, 6 - 32 X 1/4 PN PH SS SEMS EX	99 022 83
21		MYLAR INSULATOR 0.014 T	83 600 59
30		BUSHING, FLIN TAB	83 600 60

Change 2

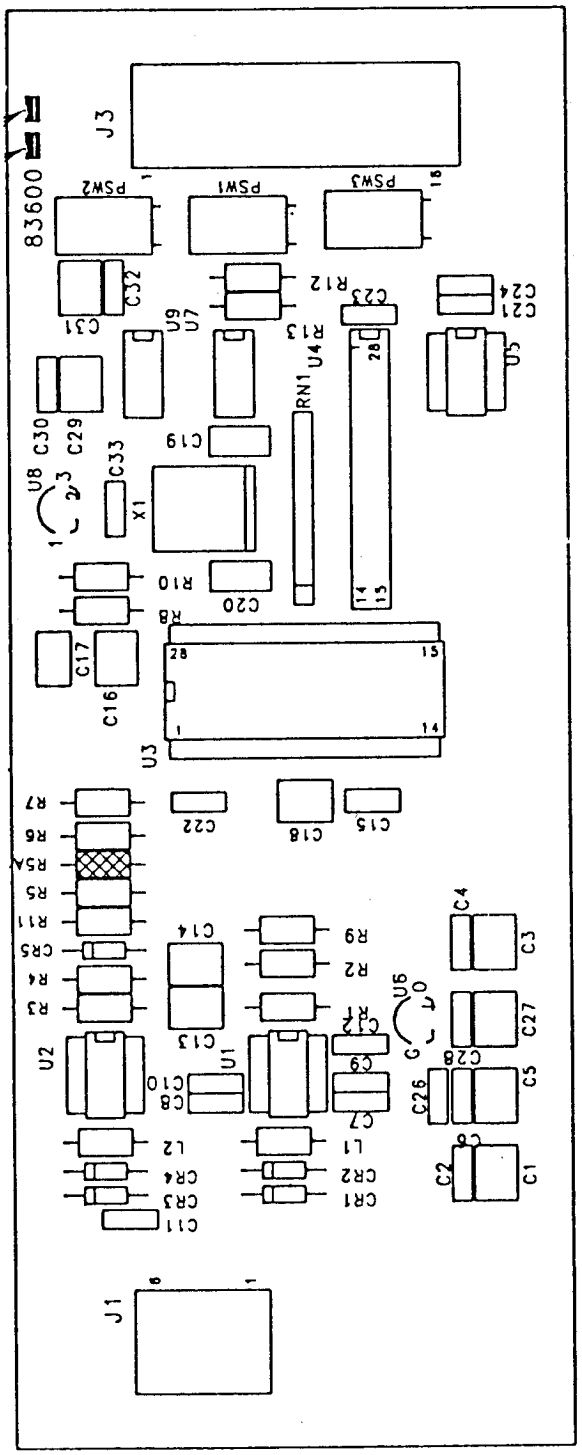


FIGURE 6.27: PARTS LOCATION DIAGRAM, SCALE BOARD ASSY (SHEET 1 OF 1)

Change 2

TABLE 6.28: I.V. POLE ASSEMBLY, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		I.V. POLE ASSEMBLY	83 444 00
1		NOT USED	
2.		I.V. POLE SUPPORT ARM	83 442 01
3.		I.V. POLE BASE ADAPTER	83 444 04
4.		I.V. POLE BASE	83 444 05
5.		LOCKING NUT, 7/8 – 20 SPECIAL TAB	26 821 00
6.		CROSS ARM	26 822 00
7.		SCREW, 5/16 – 18 X 1/2 CP HX S ZI	99 064 21
8.		LOCK WASHER, SP 5/16 S CA (QTY 2)	99 126 32
9.		LOCTITE NO. 271–05	AR
10.		SCREW, 10 – 32 X 1.75 CO HX SS NYLOK	99 044 66
11.		UPPER IV POLE EXTENSION	83 444 10
12.		LOCK WASHER, EXT #10 SS (QTY 2)	99 123 94
13.		WEIGHT LIMIT LABEL	83 500 03
14.		LUBRICANT, DOW CORNING #111	AR
18.		SCREW, 5/16 – 18 X 1.38 CP HX S ZI	99 064 93

Change 2

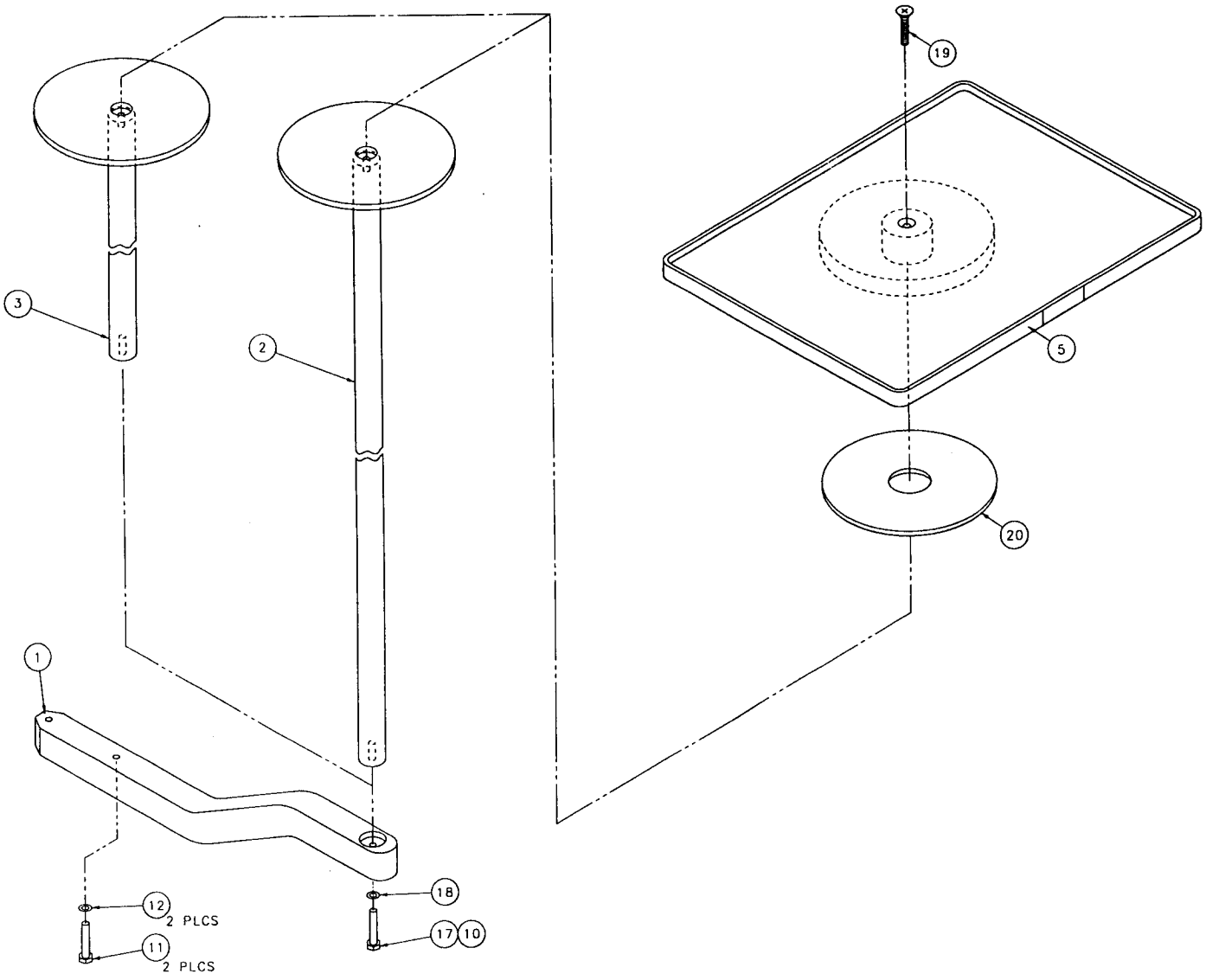


FIGURE 6.29: PARTS LOCATION DIAGRAM, HIGH/LOW MONITOR SHELF ACCESSORY

Change 2

TABLE 6.30: DEEP AND SHALLOW STORAGE COMPARTMENTS, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		DEEP STORAGE COMPARTMENT	83 441 00
		OR	
		SHALLOW STORAGE COMPARTMENT	83 440 00
1.		LARGE SWIVEL DRAWER	84 440 01
		SMALL SWIVEL DRAWER	83 441 01
2.		SUPPORT ARM	83 440 06
3.		SWIVEL SHAFT	83 440 05
4.		WRITING SURFACE	83 440 02
5.		BOTTOM RING	83 440 08
6.		TOP RING	83 440 07
7.		SPRING, PLUNGER, 3/6 - 16	83 440 09
8.		NOT USED	
9.		SCR, 1/4 - 20 X 7/8 CP SK SS NYLOK	99 057 32
10.		SPACER, 1.25 ID, 2.00 OD, 0.49T	83 440 03
11.		FLAT WSHER, 0.536 ID, 1.5 OD, 0.05T SS	99 127 78
12		HEX NUT, CASTLE, 1/2 - 20 SS 0.56T	99 113 66
13		COTTER PIN, 0.06 DIA. X 1.00 L SS	99 141 71
14.		SCR, 1/4 - 20 X 3/8 CP SK SS NYLOK	99 055 06
15.		LOCK WSHER, EXT 1/4 SS	99 125 71
16.		NOT USED	
17.		NOT USED	
18		LOCTITE, SCREWLOCK NO. 222	AR
19		LUBRICANT, DOW CORNING #111	AR
20		LOAD LIMIT LABEL, 2LB/0.9KG	83 500 60
21		LOAD LIMIT LABEL, 10 LB/4.5KG	83 500 62
		LOAD LIMIT LABEL 5LB/2.2KG	83 500 61
23		WASHER, 1.25 ID, 2.56 OD, 0.015T UHMW	83 440 04

Change 2

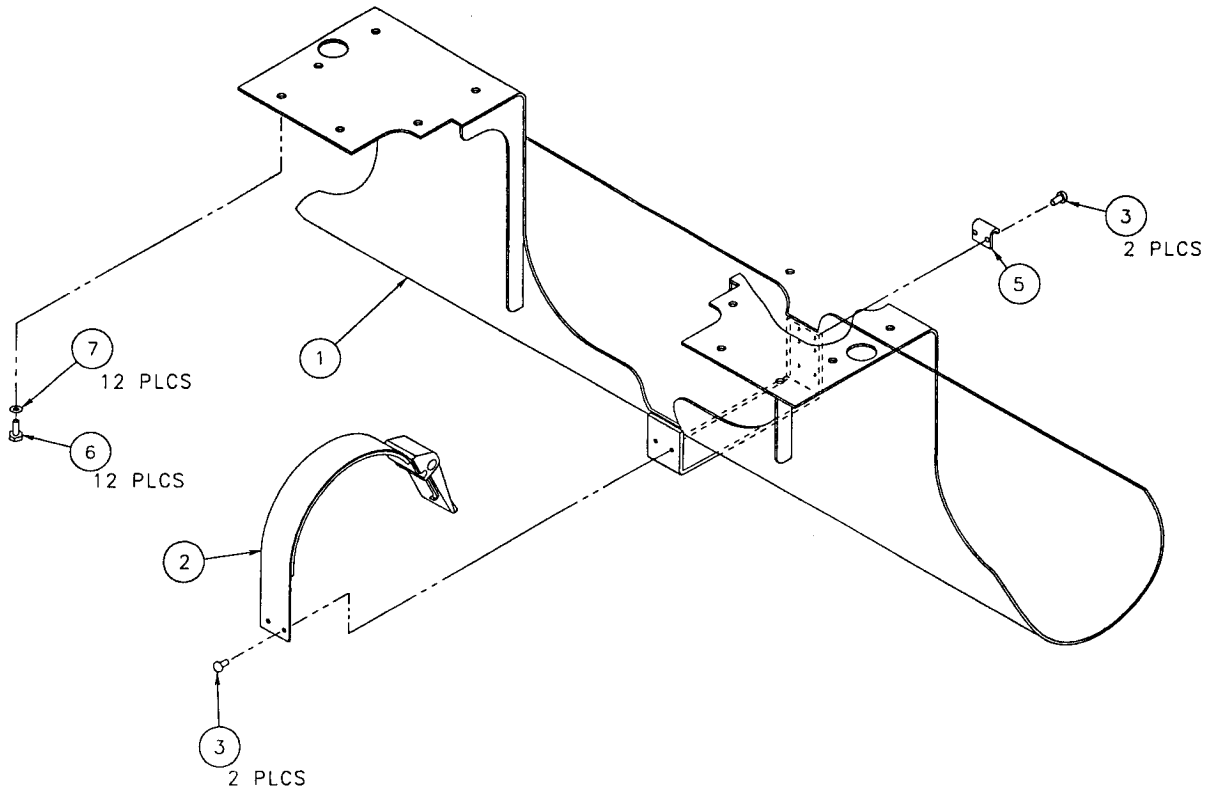


FIGURE 6.31: PARTS LOCATION DIAGRAM, OXYGEN TANK BRACKET ACCESSORY

Change 2

TABLE 6.31: OXYGEN TANK BRACKET, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		OXYGEN TANK BRACKET	83 443 00
1.		OXYGEN TANK SUPPORT	83 443 03
2		TANK CLAMP ASSEMBLY	83 443 04
3.		SCREW, 6 - 32 X 1/4 PN PH SS SEMS EX (QTY 4)	99 022 83
5		HOOK LATCH	24 144 00
6		SCREW, 10 - 32 X 1/2 CP HX SS (QTY 12)	99 042 03
7		LOCK WASHER, INT #10 SS (QTY 12)	99 123 92

Change 2

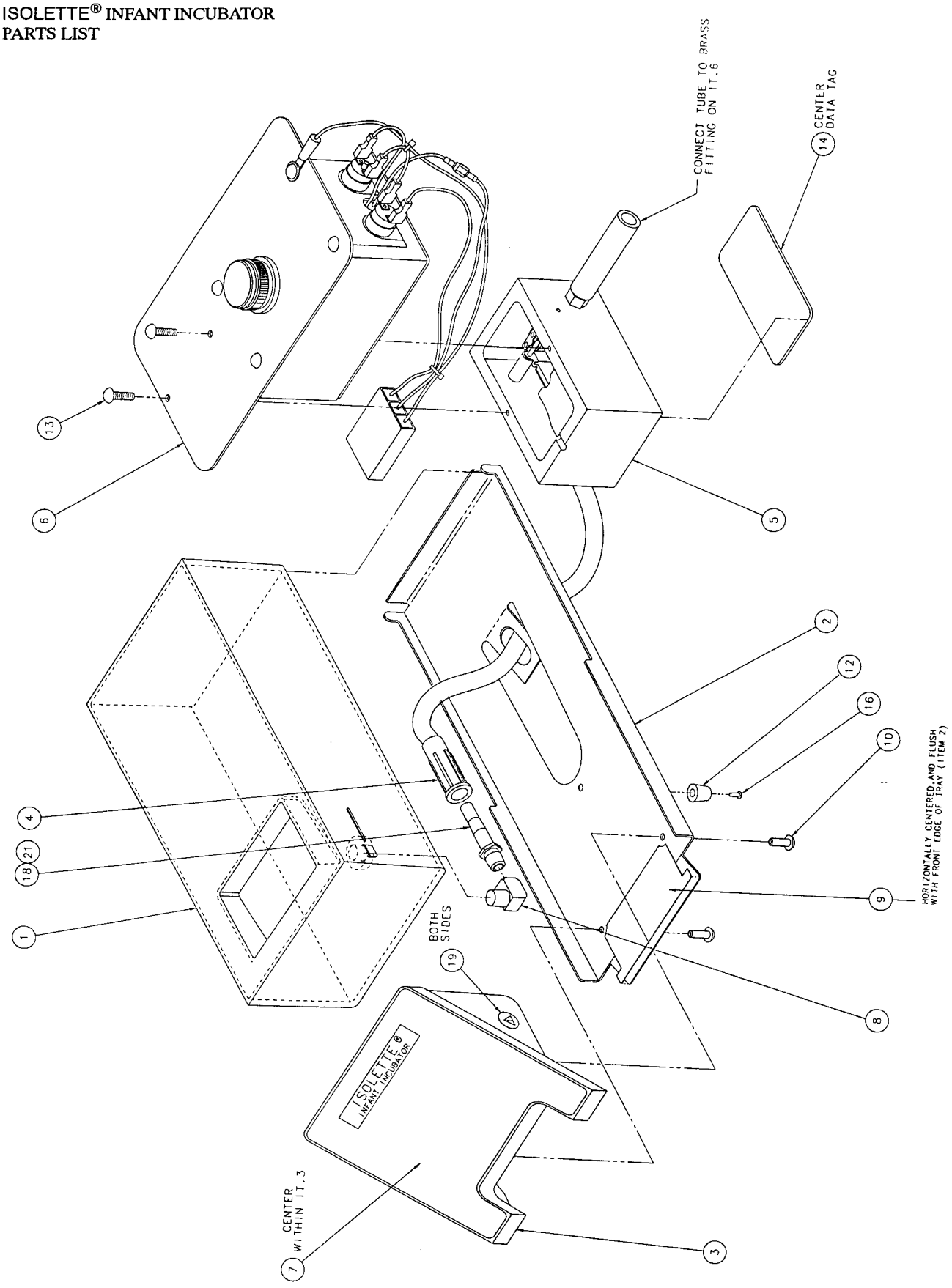


FIGURE 6.32: PARTS LOCATION DIAGRAM, HUMIDITY SYSTEM ACCESSORY

Change 2

TABLE 6.32: HUMIDITY SYSTEM, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		HUMIDITY SYSTEM 120V	83 610 70
		HUMIDITY SYSTEM 240V	83 610 80
		HUMIDITY SYSTEM 100V	83 610 90
1		HUMIDITY RESERVOIR	83 610 00
2		HUMIDITY TRAY	83 610 01
3		HUMIDITY DOOR	83 610 03
4		TUBING	83 612 04
5		FLOAT HOUSING ASSEMBLY	83 611 70
6		EVAPORATOR RESERVOIR ASSEMBLY 120V	83 612 50
		OR	
		EVAPORATOR RESERVOIR ASSEMBLY 240V	83 612 51
		OR	
		EVAPORATOR RESERVOIR ASSEMBLY 100V	83 612 52
		RESERVOIR CAP	83 612 37
		METAL FLAT WASHER, 1.29 X 0.88 X 0.15	83 610 17
		POLYPROPYLENE WASHER 2.00 X 0.49 X 0.06	83 610 18
7		HUMIDITY DRAWER OVERLAY	83 500 06
8		ELBOW, STREET, 1/8 NPT M/F NICKLE	83 612 03
9		HUMIDITY TRAY TRIM STRIP	83 610 04
10		SCREW, 6 - 32 X 5/16 TR PH SS NYLOK (QTY 2)	99 023 03
11.		SCREW, 4 - 40 X 1/4 TR PH SS NYLOK	99 010 67
12		BUMPER, RUBBER RECESSED (W/WHSR)	26 605 00
13.		SCREW, 6 - 32 X 5/16 PN PH SS SEMS EX (QTY 2)	99 023 05
13.		CONNECTOR, 1/8 NPTM, 1/4 ID HOSE	83 612 02
14.		NOT USED	
15		NOT USED	
16		SCR, 4 - 40 X 1/4 TR PH SS NYLOK	99 010 67
17		NOT USED	
18		CONN, 1/8 NPTM - 1/4 HOSE, BR NKL PL	93 612 02
19		MANUAL REFERENCE LABEL	83 500 34
20		DISTILLED WATER NOTE	83 990 14
21		PIPE SEALANT, W/TL (LOCT#592)	AR

Change 2

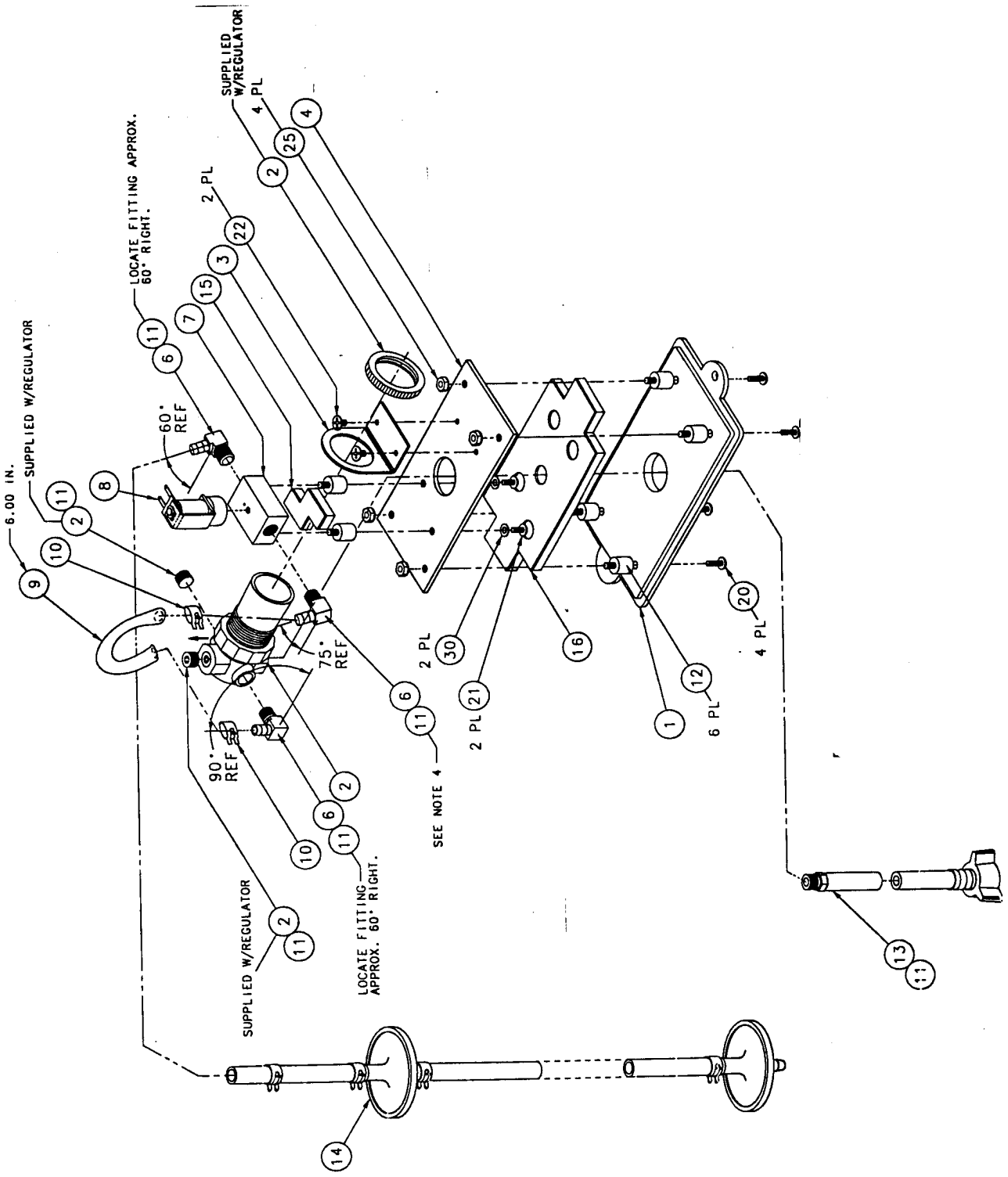


FIGURE 6.33: PARTS LOCATION DIAGRAM, OXYGEN SYSTEM ACCESSORY

Change 2

TABLE 6.33: OXYGEN SYSTEM, ACCESSORY, PARTS LIST

(Sheet 1 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		OXYGEN ASSY GREEN DISS	83 670 50
		OXYGEN ASSY GREEN	83 670 51
		OXYGEN ASSY WHITE	83 670 52
		OXYGEN ASSY BLUE	83 670 53
1.		OXYGEN CELL (REPLACE IN PAIRS)	83 620 30
2.		100% OXYGEN CALIBRATION FIXTURE	83 620 55
3.		SCREW, 8 - 32 X 1/2 PH SS NYLOK (QTY 2)	99 031 99
4.		OXYGEN CELL MOUNTING PLATE	83 620 45
5.		HOSE HANGER	83 620 56
6.		OXYGEN CONTROL VALVE ASSY	
		GREEN DISS	83 620 60
		OXYGEN CONTROL VALVE ASSY GREEN	83 621 20
		OXYGEN CONTROL VALVE ASSY WHITE	83 621 21
		OXYGEN CONTROL VALVE ASSY BLUE	83 621 22
		OXYGEN CONTROL VALVE ASSEMBLY PARTS LIST	
1		ACCESS DOOR	83 100 11
2.		40 PSI PRESSURE REGULATOR	83 620 61
3.		REGULATOR BRACKET	83 620 62
4.		MOUNTING PLATE	83 620 63
6.		90° ELBOW, 1/4 HOSE- 1/8NPT (M)	20 102 10
7.		SOLENOID MOUNTING BLOCK	83 620 67
8.		SOLENOID VALVE, 12VDC, 70 PSI. O2	17 751 37
9.		BRAIDED HOSE, PVC, 1/4 ID	83 620 69
10		HOSE CLAMP, 0.460 - 0.545 ID	83 620 64
11		TEFLON PIPE TAPE	AR
12		VIBRATION ISOLATOR	68 230 24
13		GREEN DISS HOSE	83 620 40
		GREEN HOSE	83 620 41
		WHITE HOSE	83 620 42
		BLUE HOSE	83 620 43
14		DUAL FILTER ASSY CONSISTS OF:	83 620 70
		5-INCH HOSE	83 612 41
		SUCTION FILTER	83 620 57
		HOSE CLAMP, 0.46 -0545 OD	83 620 69
		12-INCH HOSE	83 612 41
15		SOUND COAT, BLOCK SOL	83 620 66
16		SOUND COAT , MOUTING PLATE	83 620 68

Change 2

TABLE 6.33: OXYGEN SYSTEM, ACCESSORY, PARTS LIST

(Sheet 2 of 2)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
20		SCR, 8 - 32 X 3/8 TR PH SS NYLOK	99 031 52
21		SCR, 8 - 32 X 3/16 TR PH SS	99 031 09
22		SCR, 8 - 32 X 1/4 TR PH SS NYLOK	99 030 76
23		HEX NUT, 8 -32 KEPS S ZI	99 106 32
30		LOCK WASHER, INT #8 SS	99 122 92

Change 2

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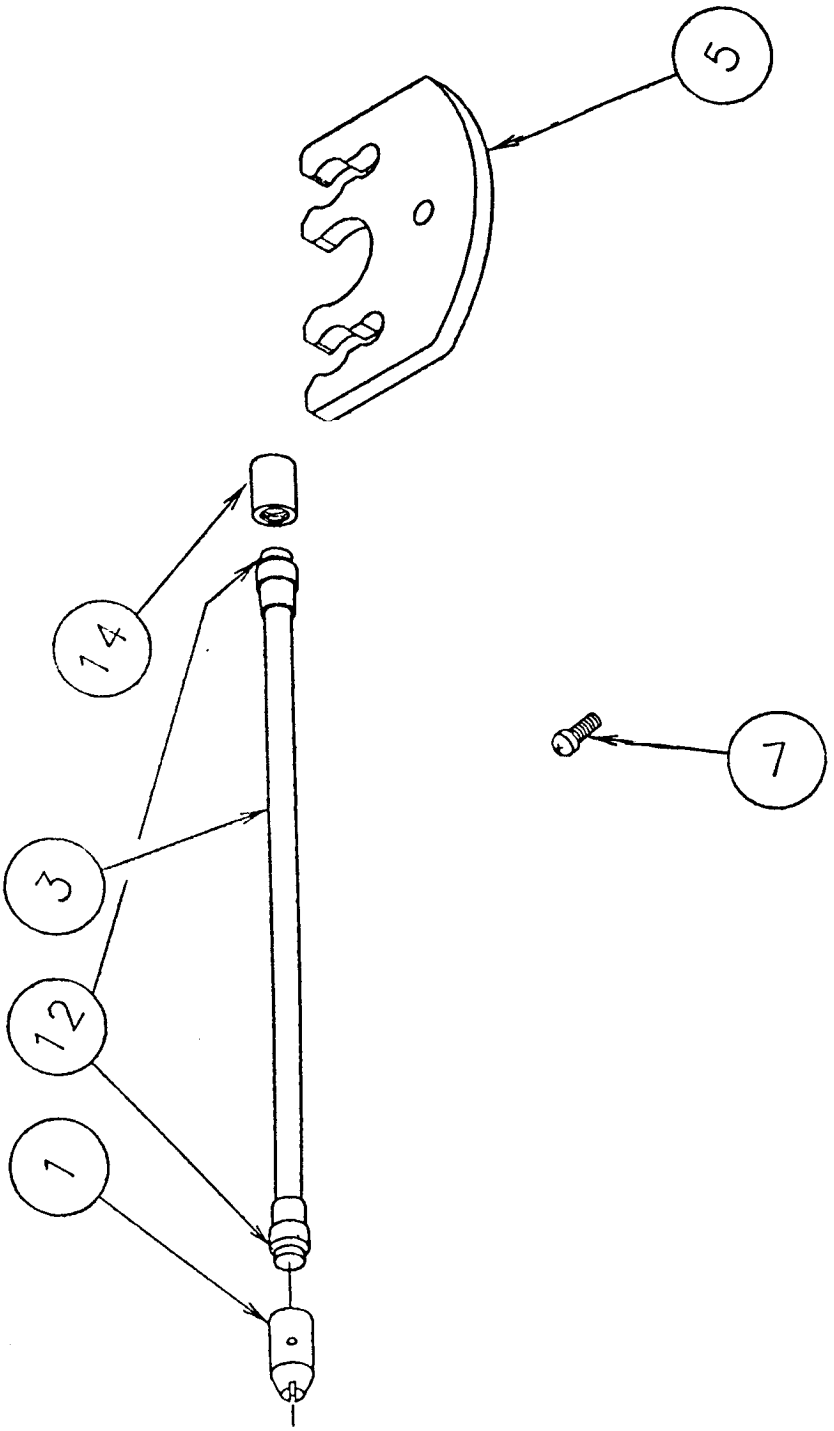


FIGURE 6.34: PARTS LOCATION DIAGRAM, VENTILATOR TUBING SUPPORT ACCESSORY

Change 2

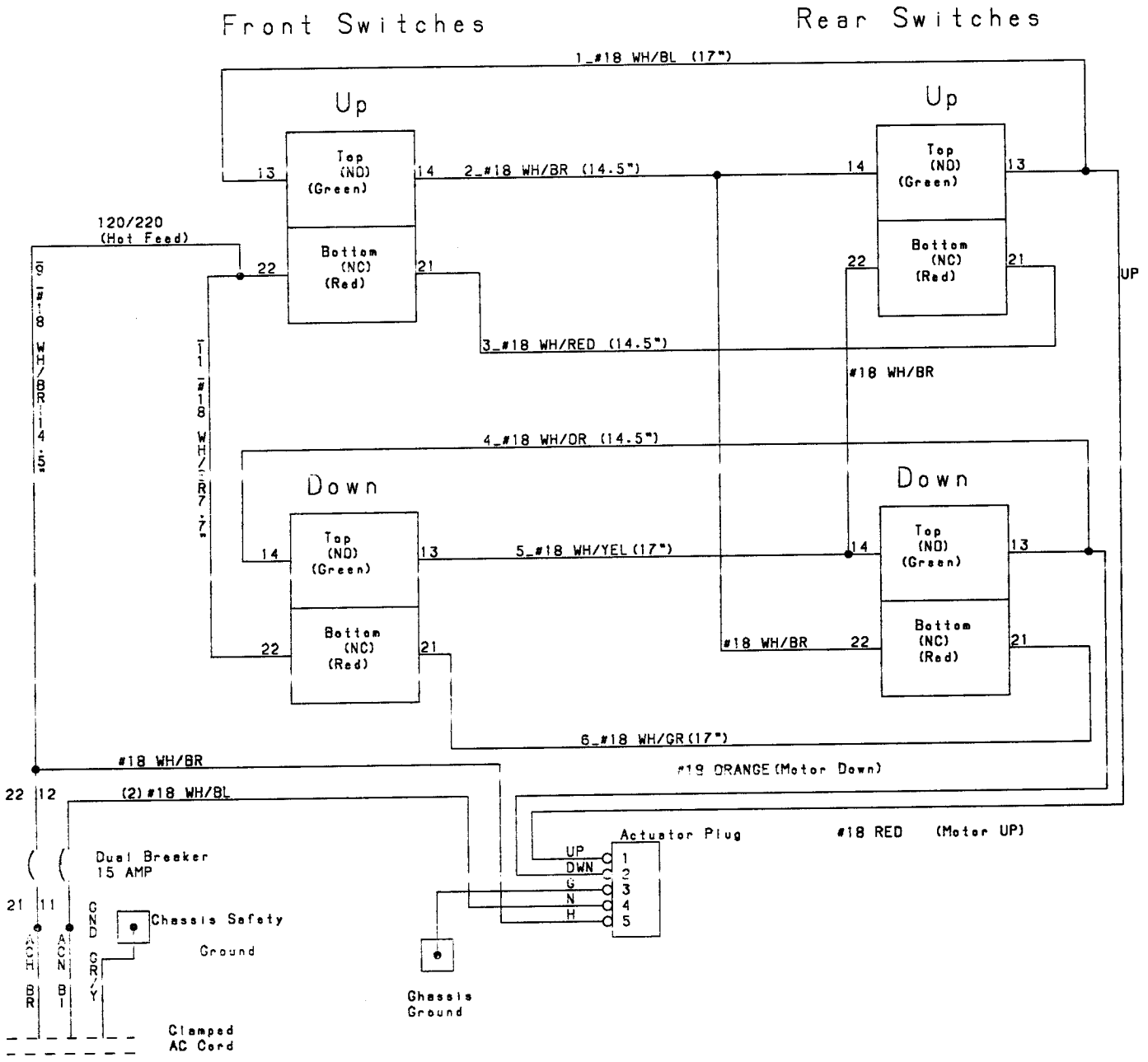


FIGURE 7.1: WIRING DIAGRAM VHA STAND (SHEET 1 OF 1)

TABLE 6.34: VENTILATOR TUBING SUPPORT, ACCESSORY, PARTS LIST

(Sheet 1 of 1)

ITEM NO.	REFERENCE DESIG.	DESCRIPTION	PART NUMBER
		VENTILATOR TUBING SUPPORT	81 001 05
1.		PIN, BALL DTT, MODIFIED	68 252 08
3.		FLEXIBLE TUBING	68 252 02
5.		TUBING HANGER	68 252 04
7.		SCREW, 8 – 32 X 1/2 TR PH SS NYLOK	99 031 99
12		LOCTITE #242	AR
14.		FLEXIBLE TUBING, FERRULE	83 001 06

Change 2

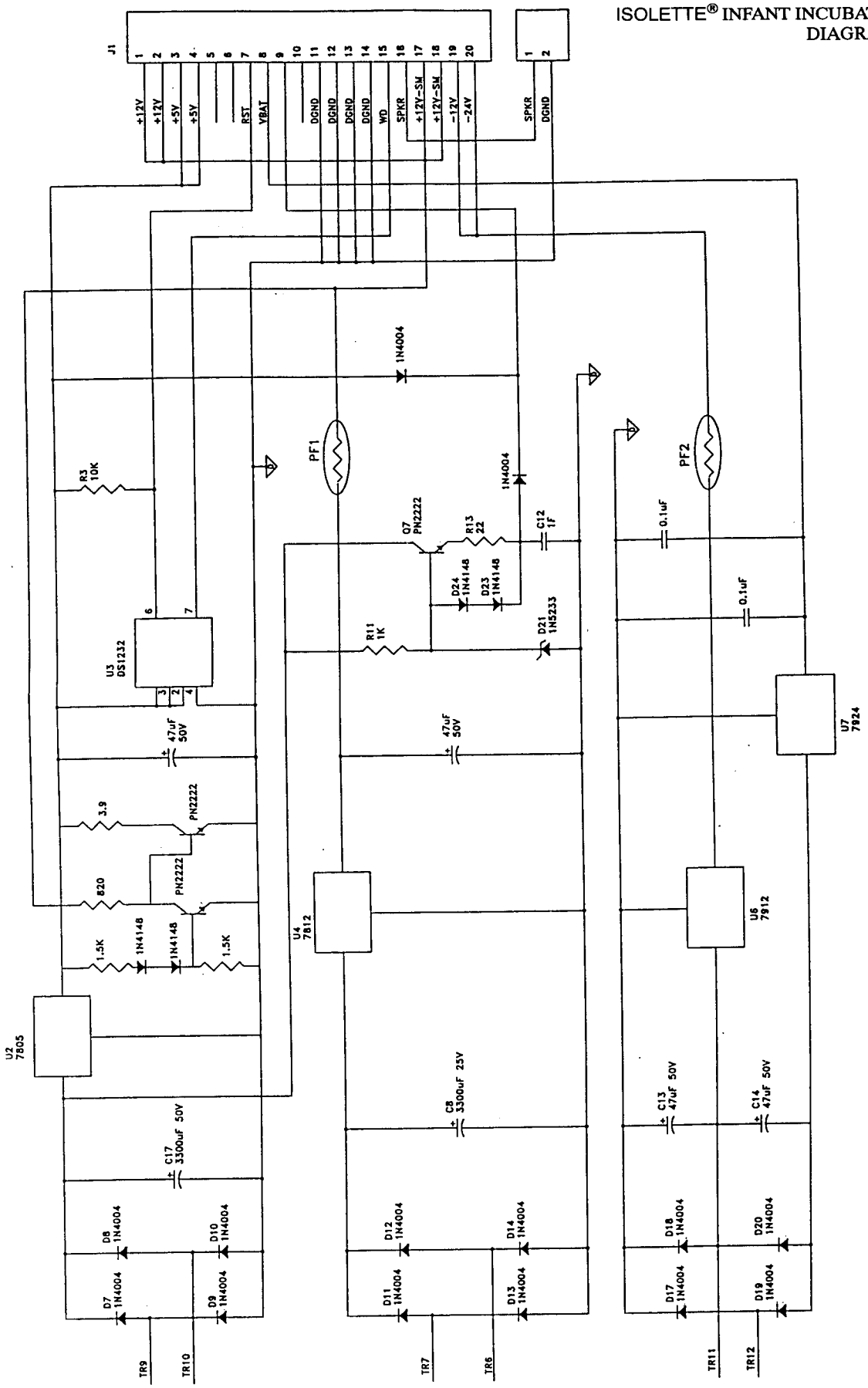


FIGURE 7.3: CONTROLLER POWER SUPPLY SCHEMATIC DIAGRAM (SHEET 2 OF 3)

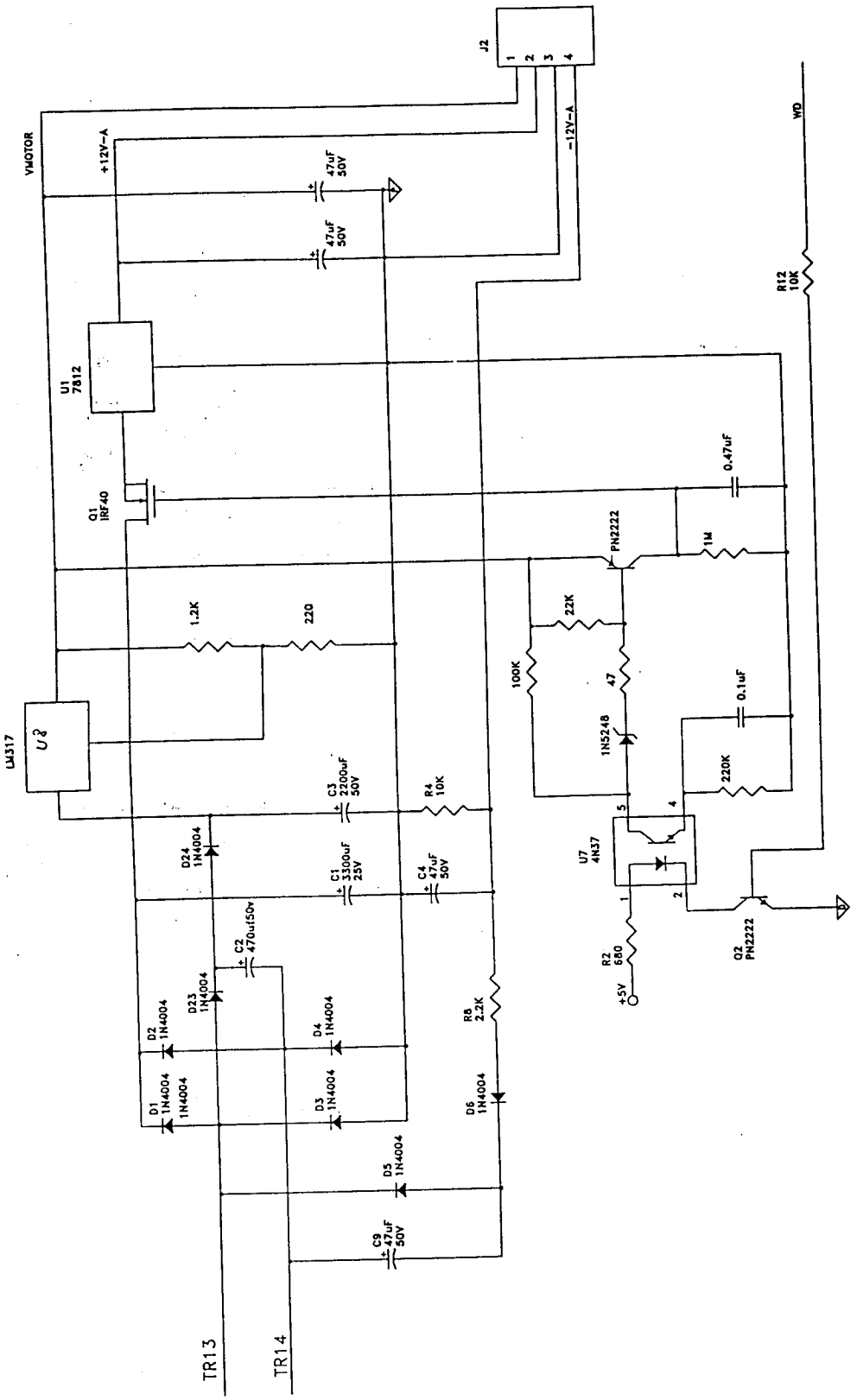


FIGURE 7.3: CONTROLLER POWER SUPPLY SCHEMATIC DIAGRAM (SHEET 3 OF 3)

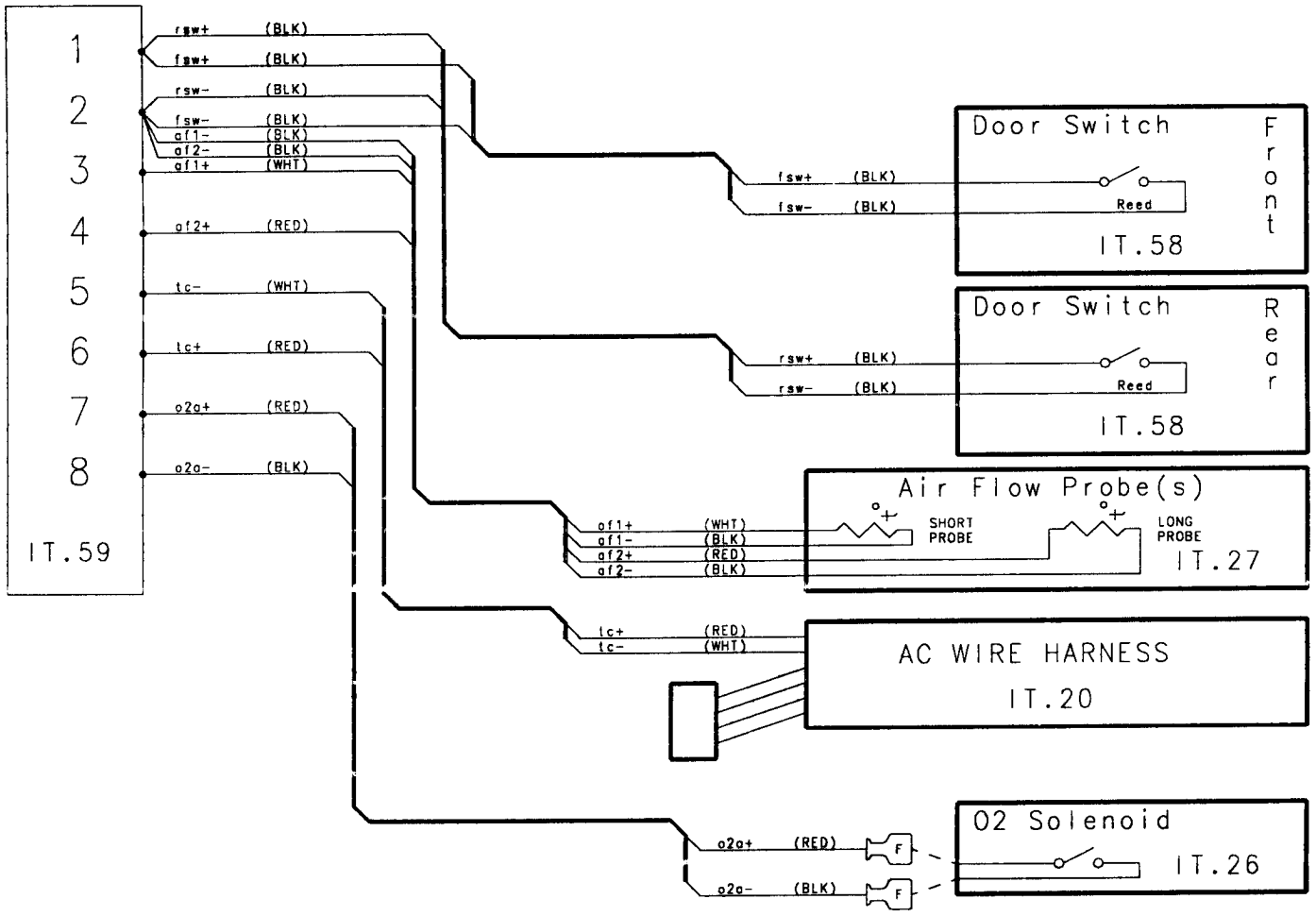
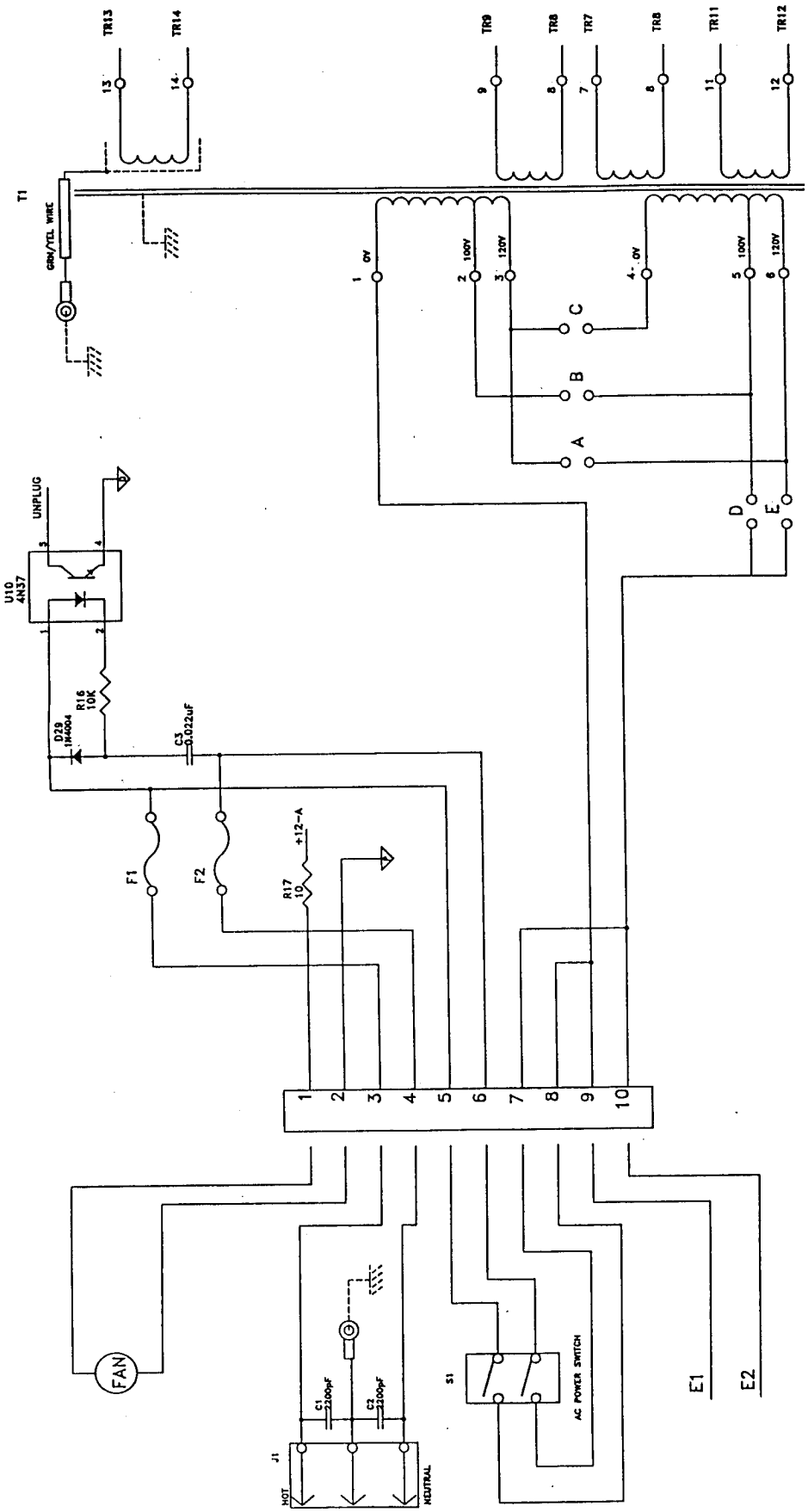


FIGURE 7.2: SHELL WIRING DIAGRAM
(SHEET 1 OF 1)



100 VAC SHORT B, D F1,F2 5A
120 VAC SHORT A, E F1,F2 5A
220/240 VAC SHORT C, E F1,F2 2.5A

FIGURE 7.3: CONTROLLER POWER SUPPLY SCHEMATIC DIAGRAM (SHEET 1 OF 3)

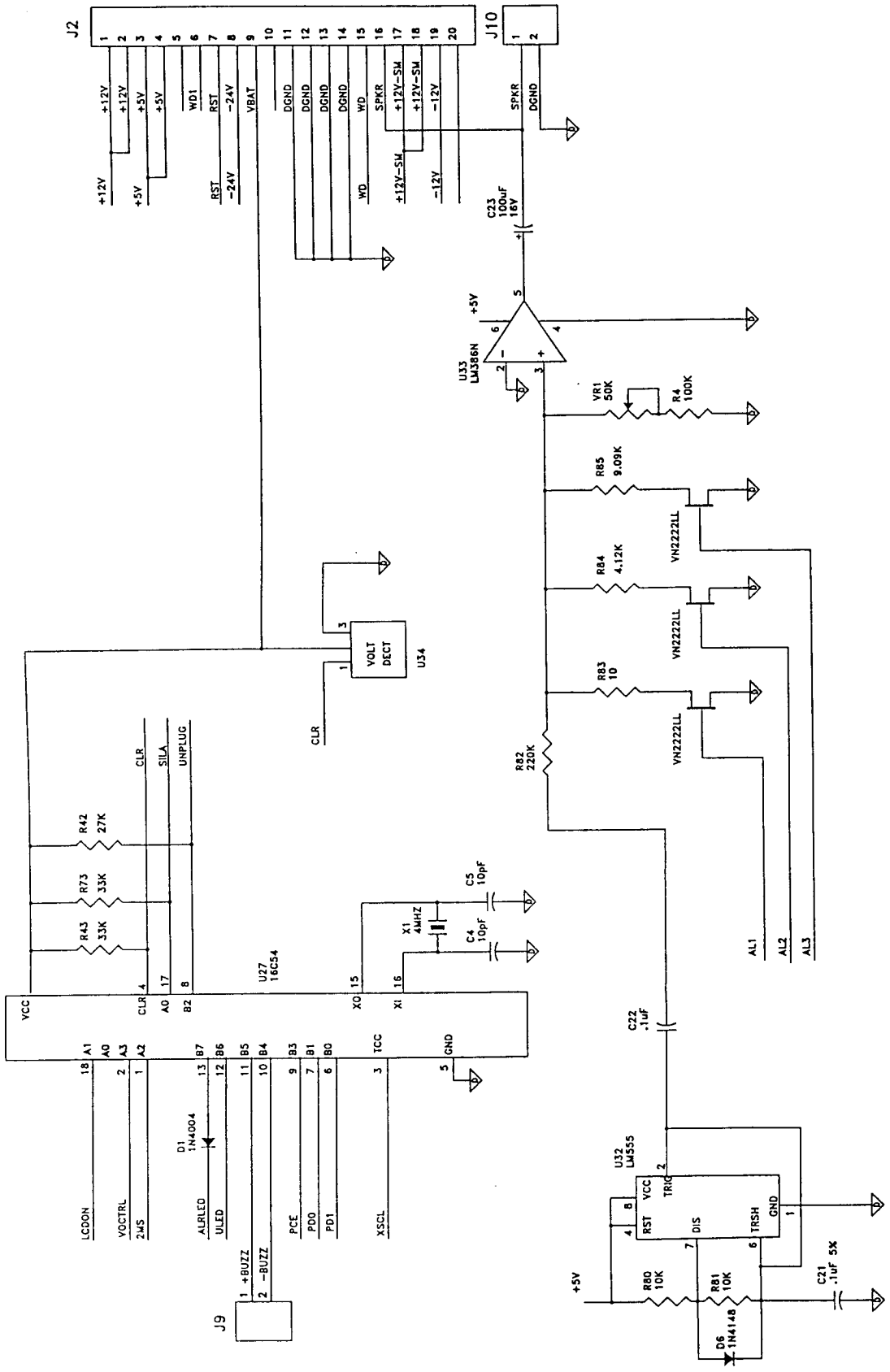


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 4 OF 7)

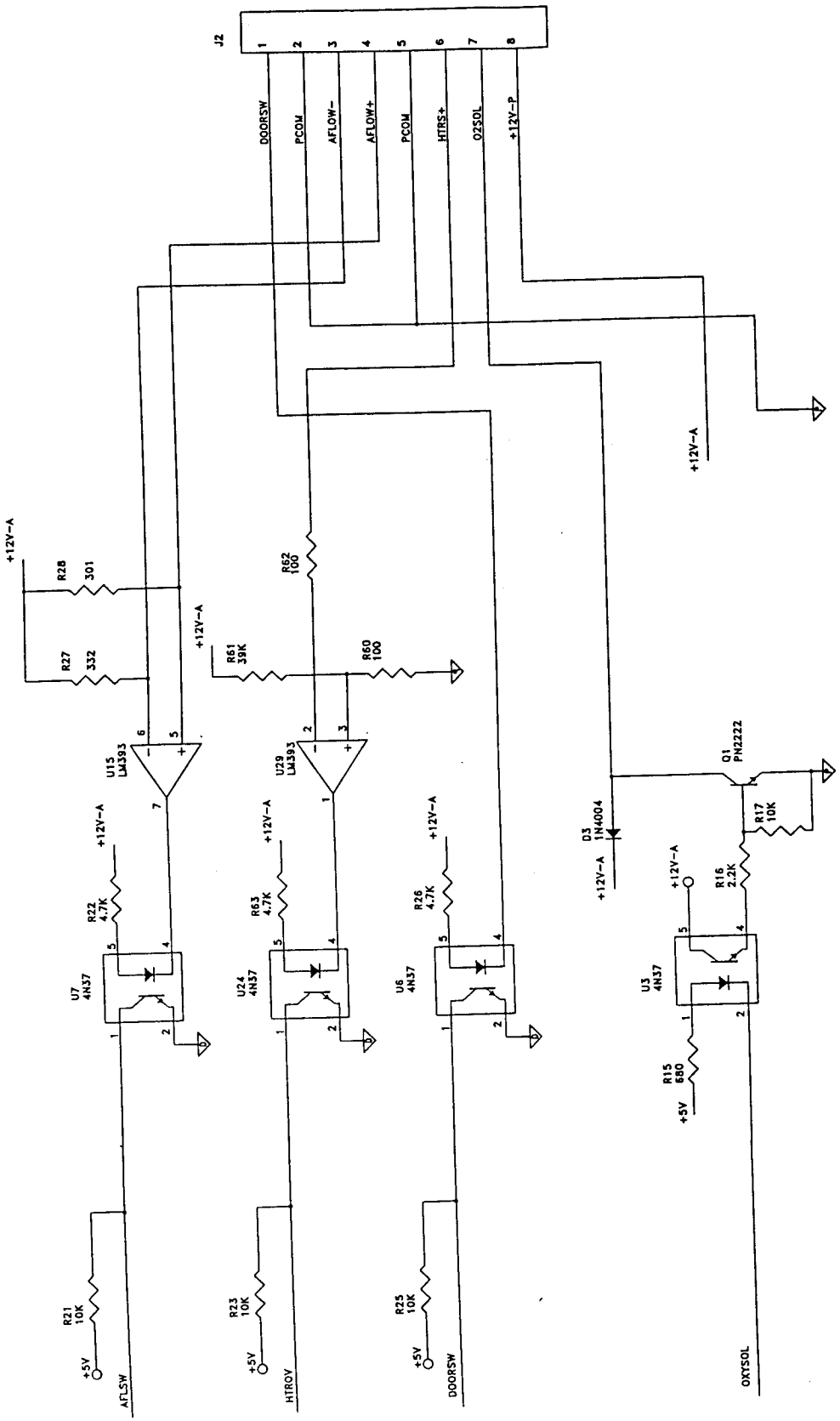


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 5 OF 7)

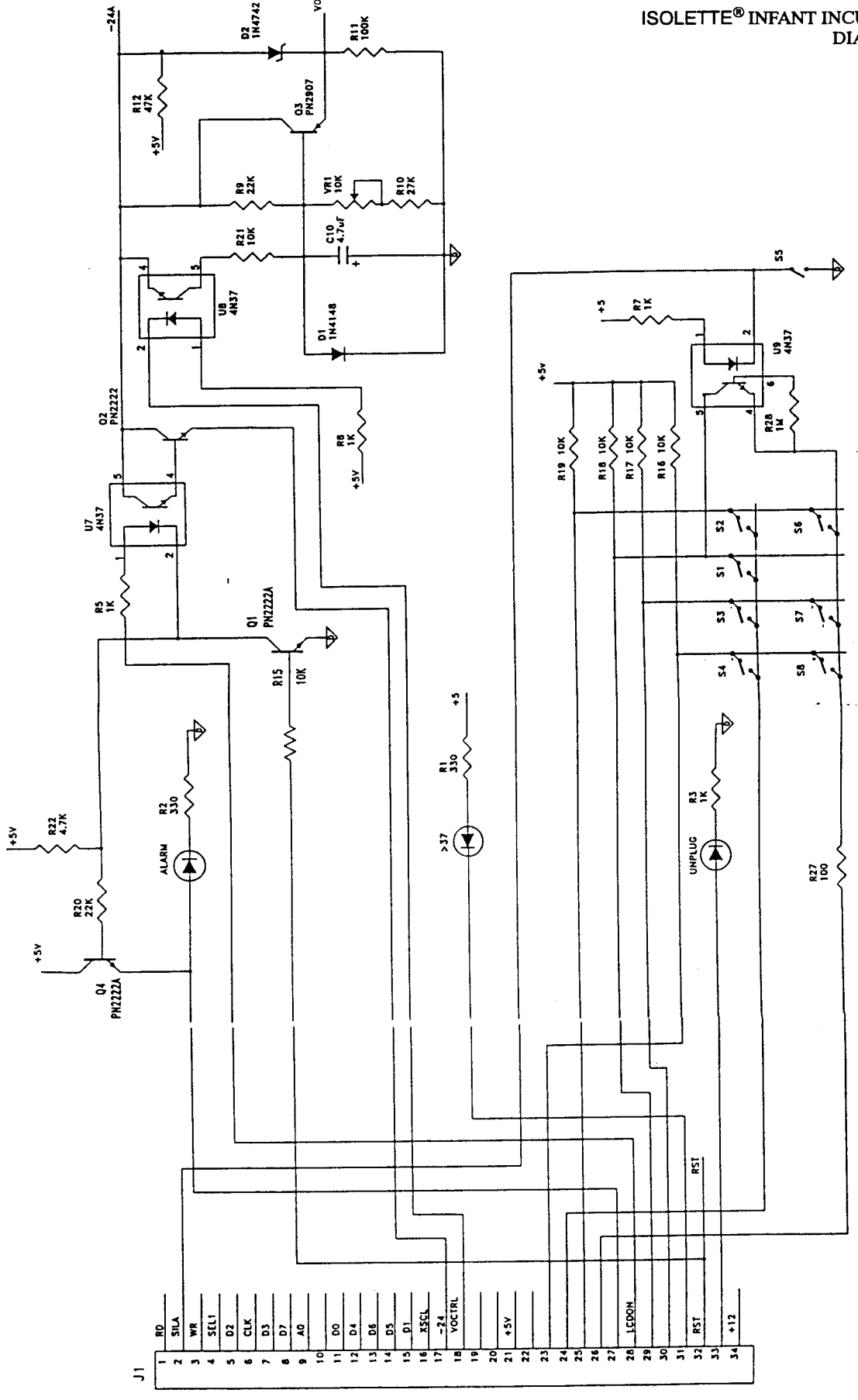


FIGURE 7.4: CONTROLLER FRONT PANEL SCHEMATIC DIAGRAM (SHEET 1 OF 3)

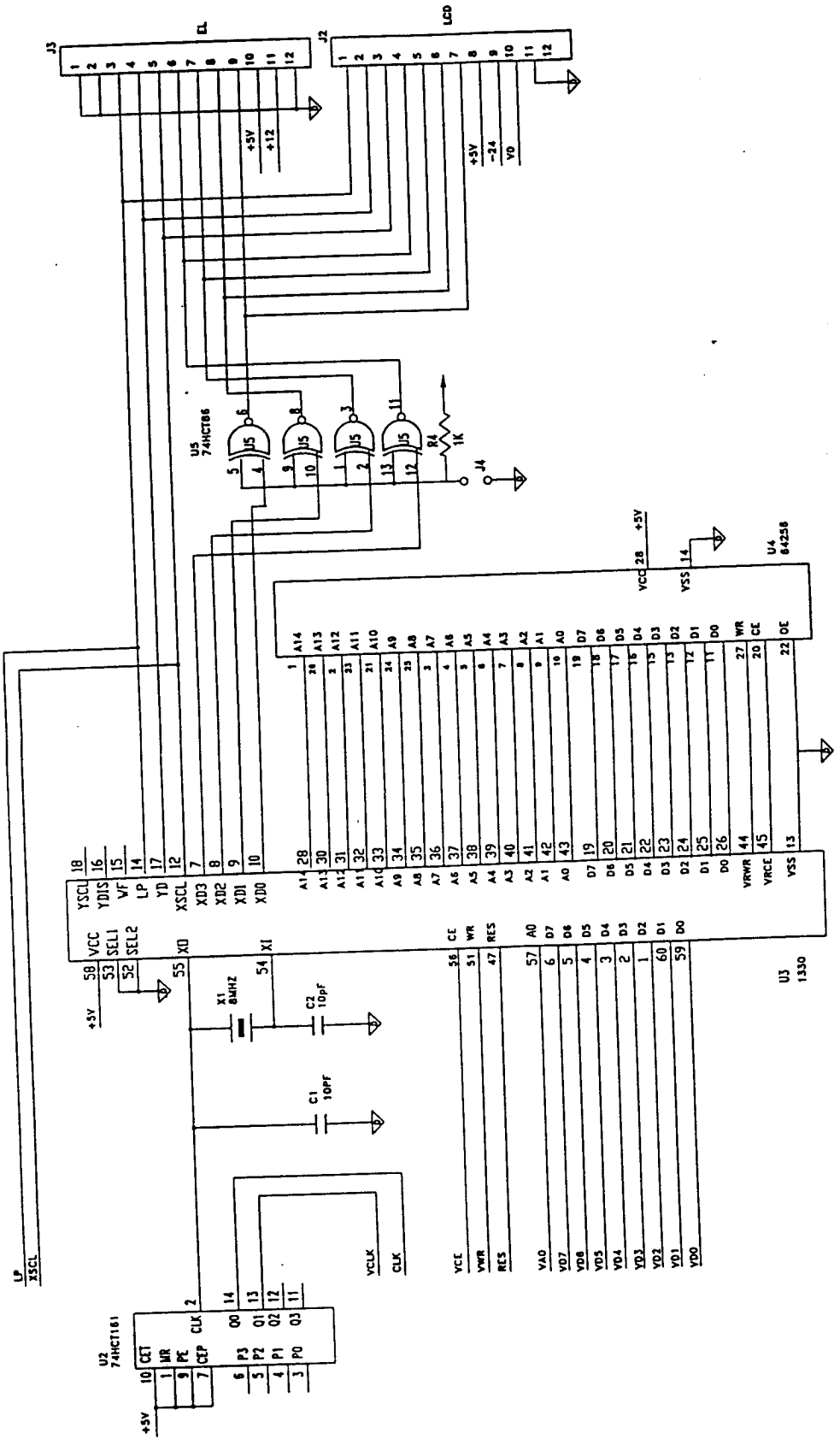


FIGURE 7.4: CONTROLLER FRONT PANEL SCHEMATIC DIAGRAM (SHEET 2 OF 3)

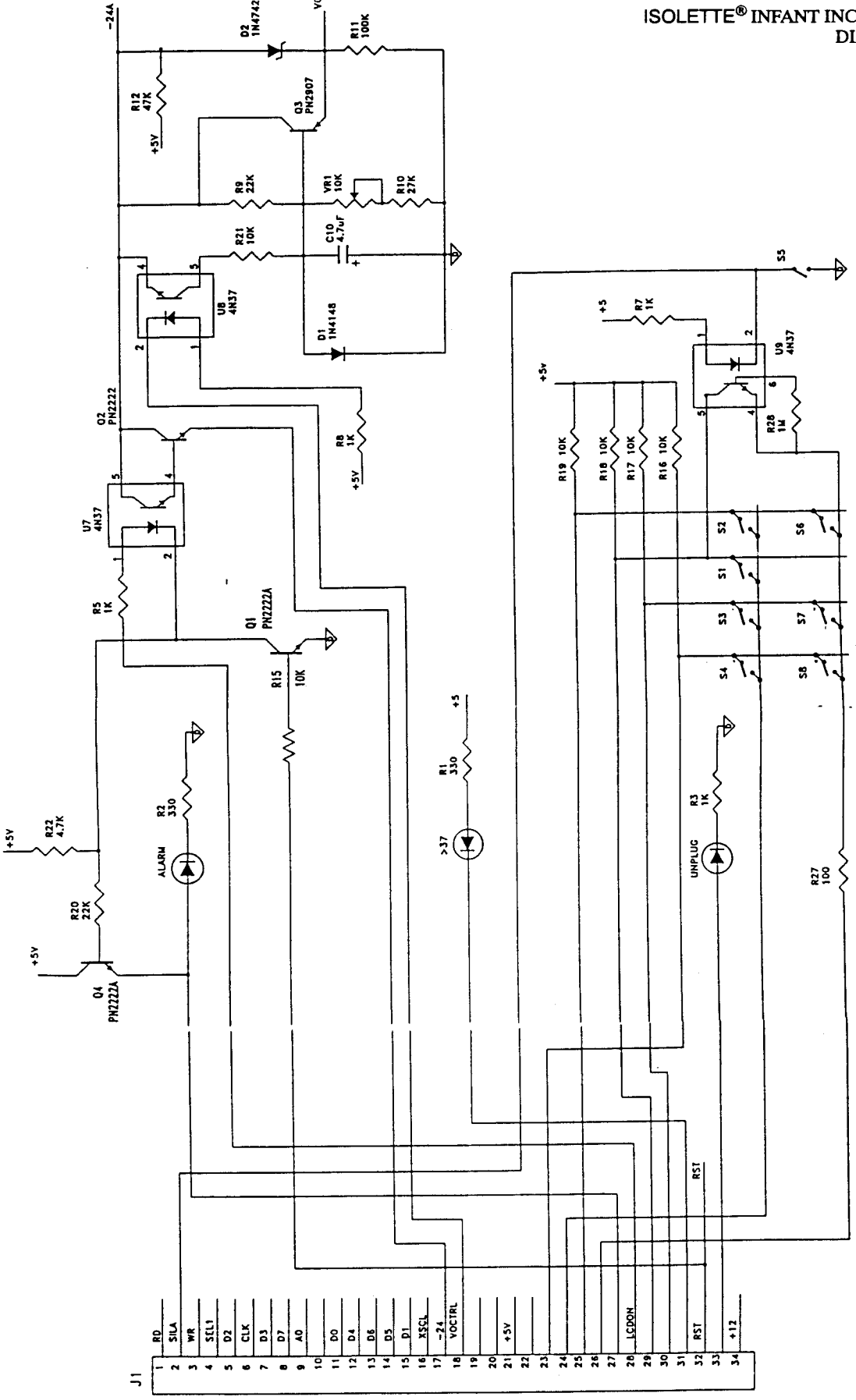


FIGURE 7.4: CONTROLLER FRONT PANEL SCHEMATIC DIAGRAM (SHEET 1 OF 3)

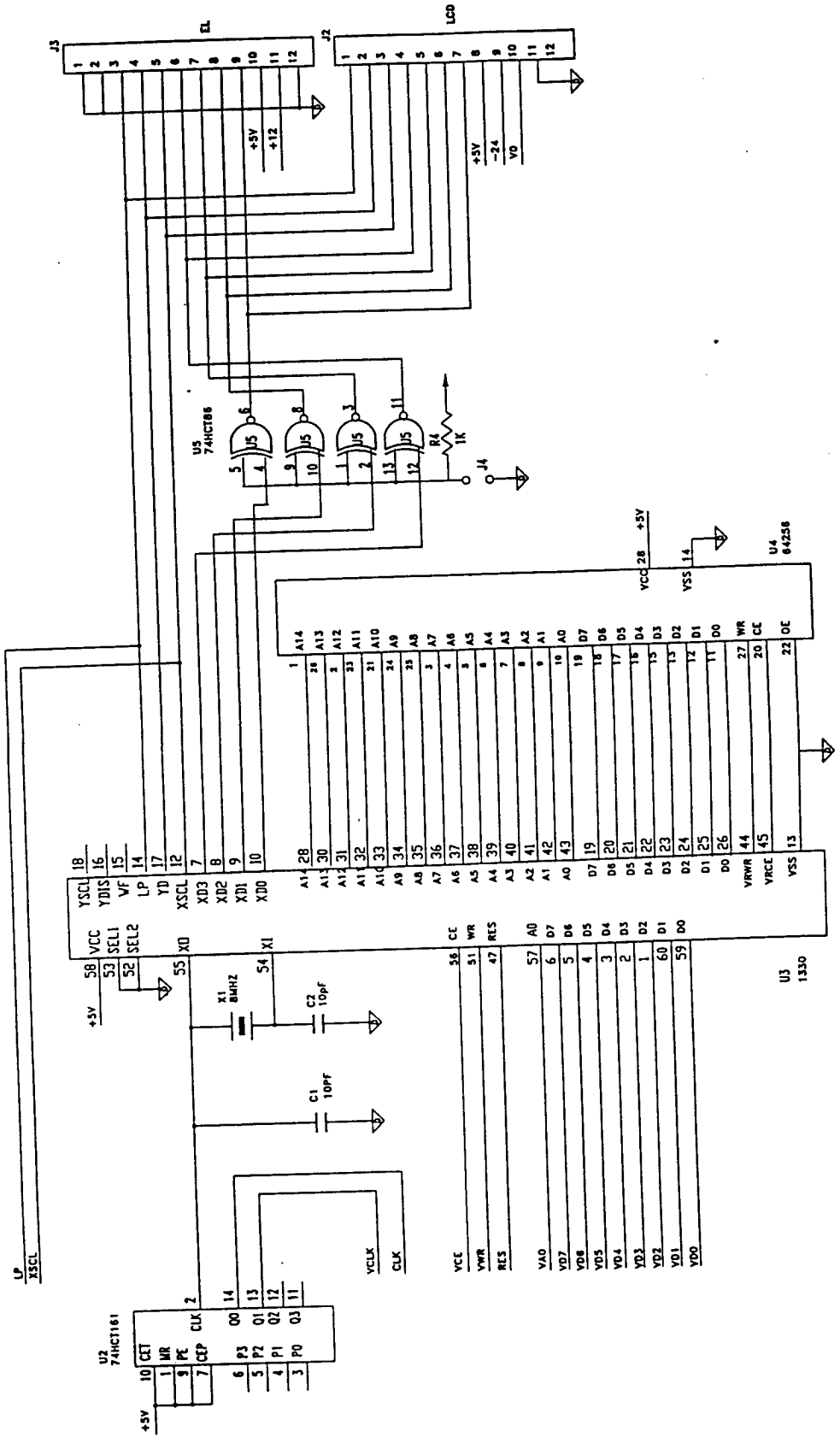


FIGURE 7.4: CONTROLLER FRONT PANEL SCHEMATIC DIAGRAM (SHEET 2 OF 3)

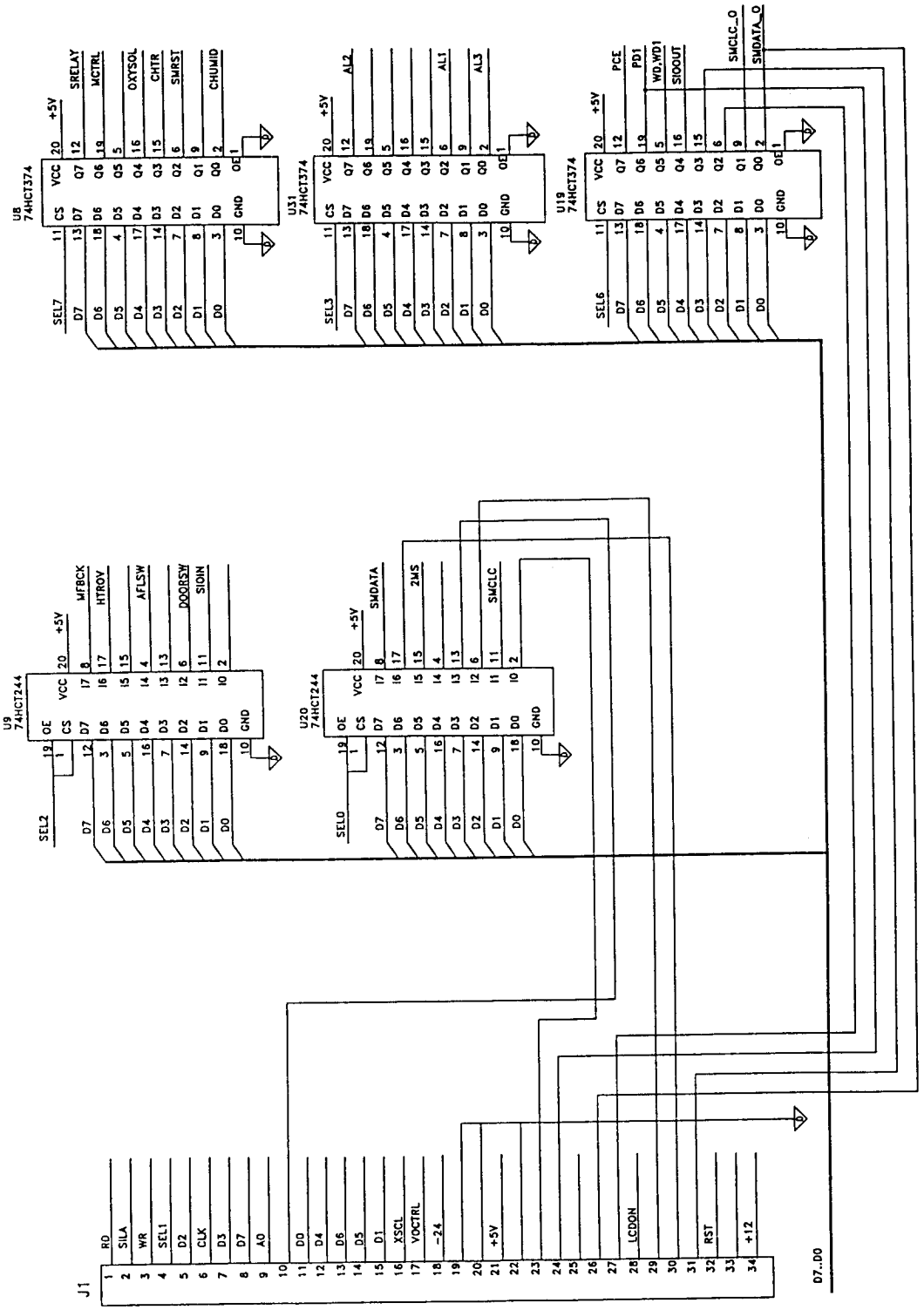


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 2 OF 7)

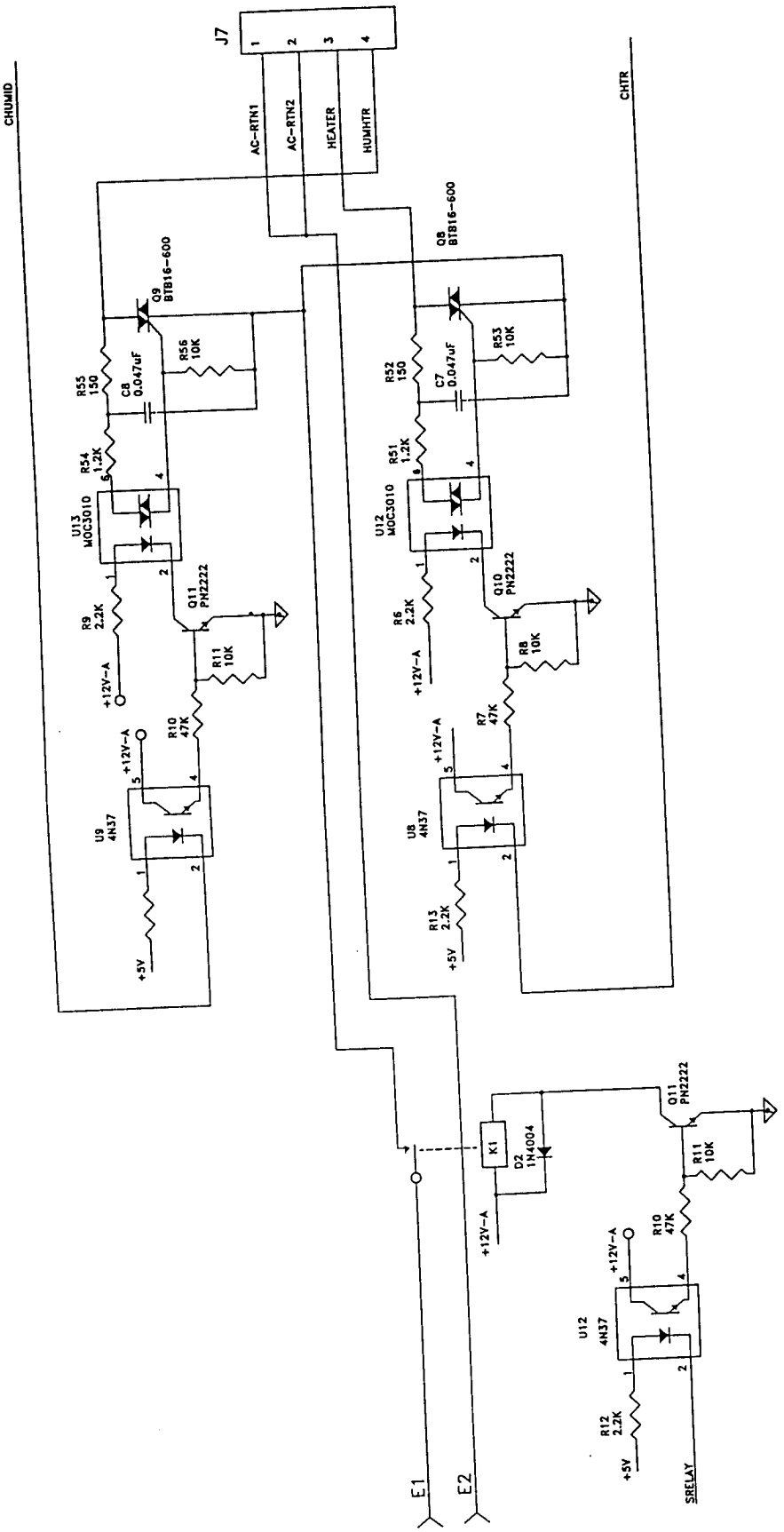


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 3 OF 7)

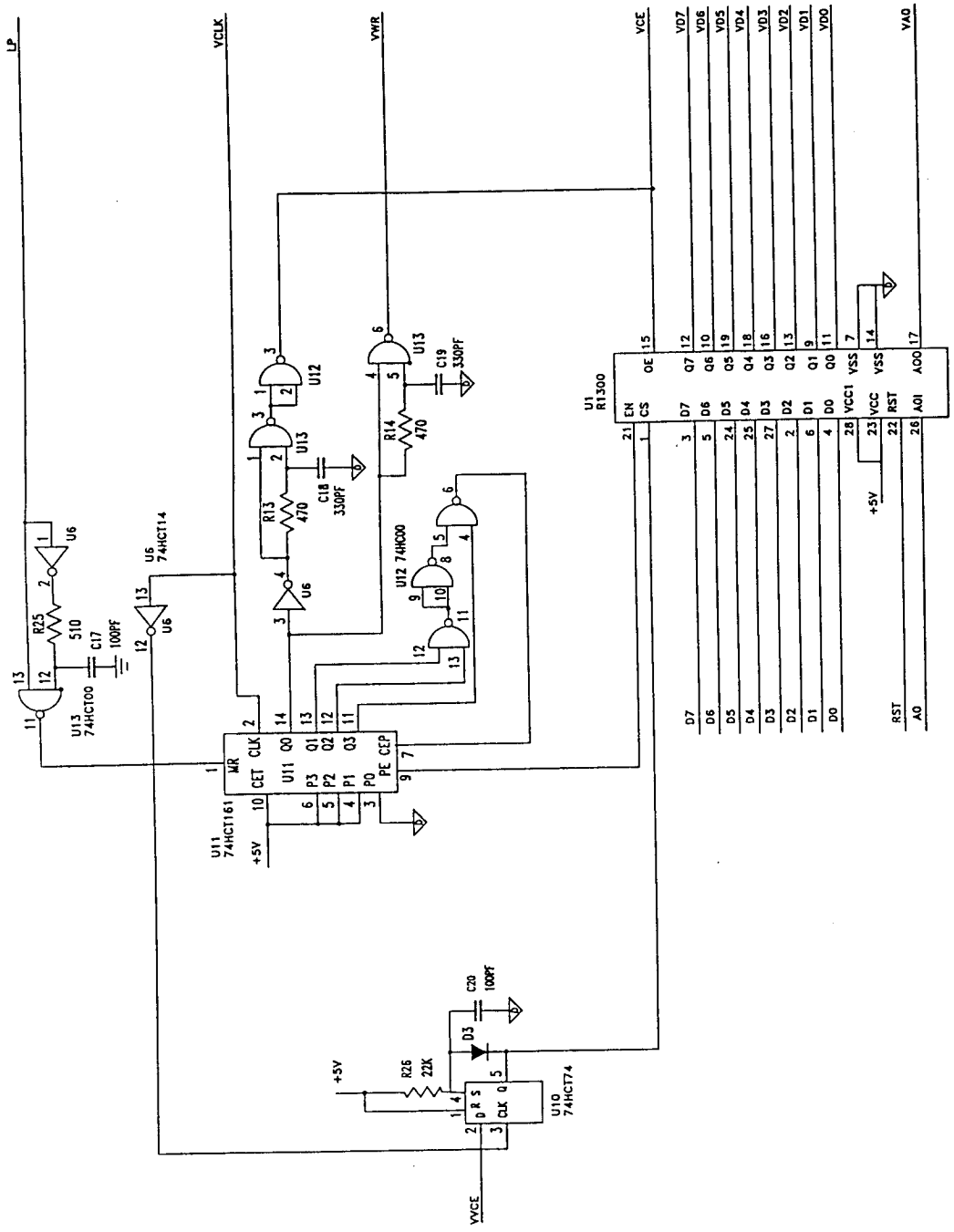


FIGURE 7.4: CONTROLLER FRONT PANEL SCHEMATIC DIAGRAM (SHEET 3 OF 3)

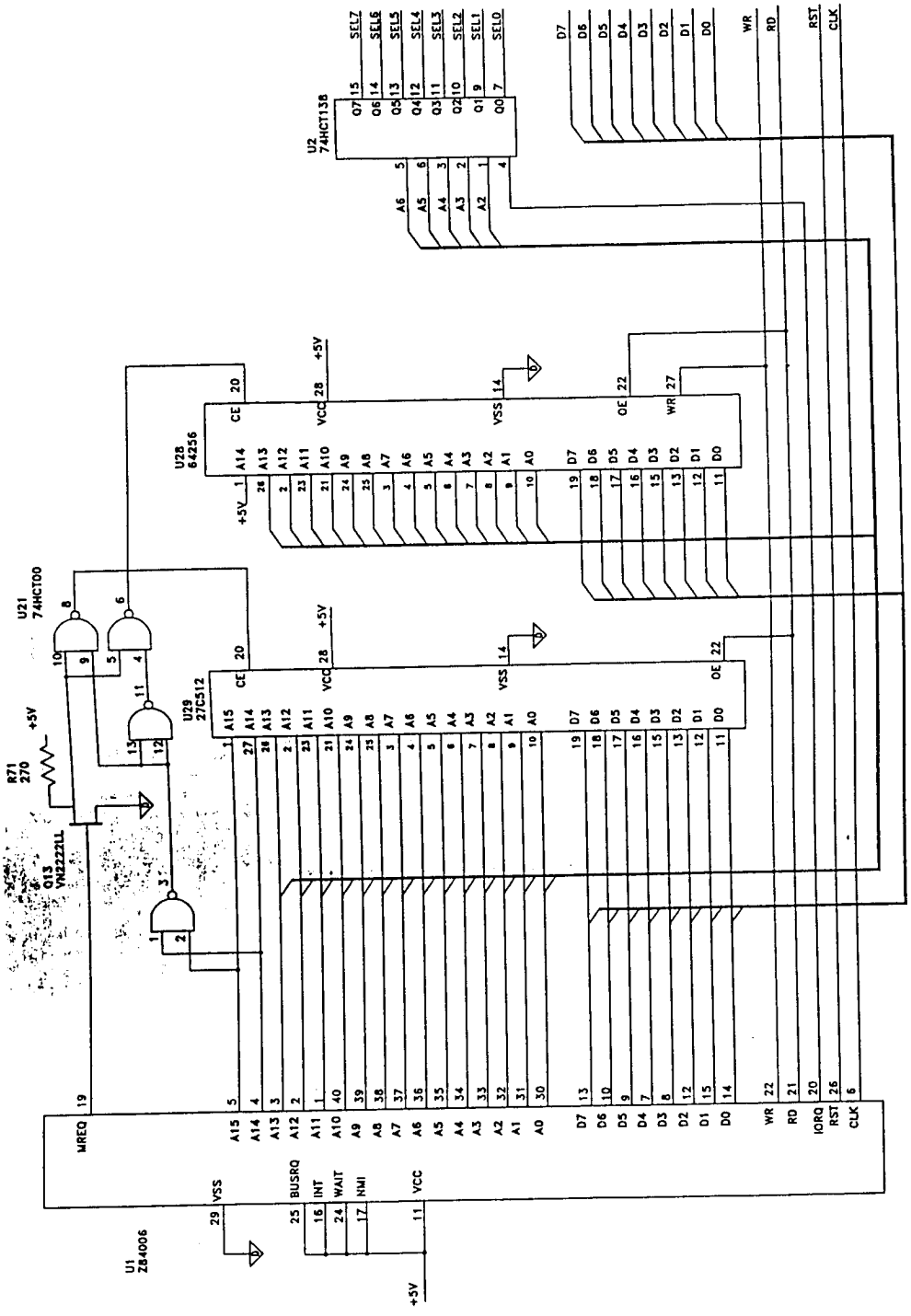


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 1 OF 7)

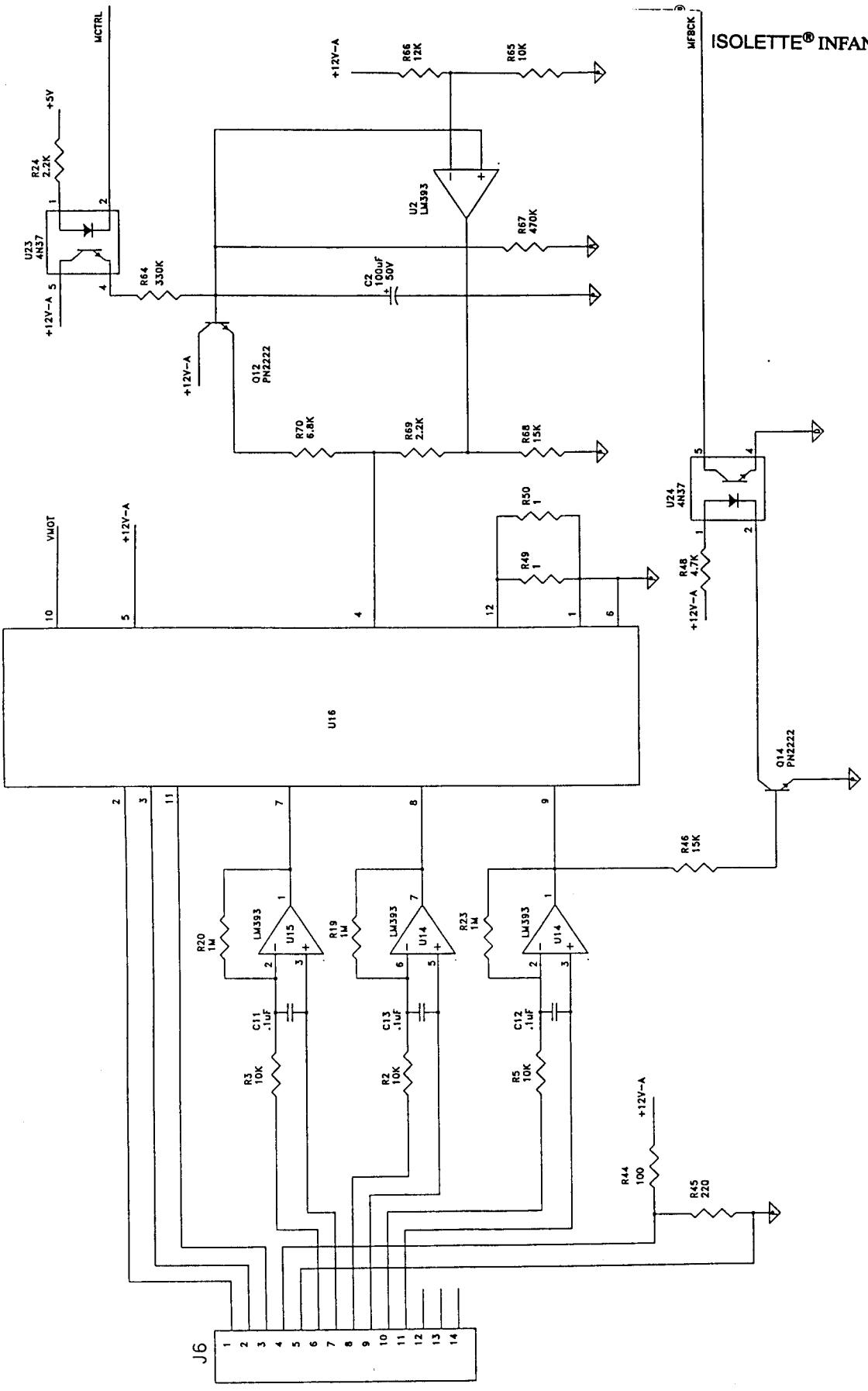


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 6 OF 7)

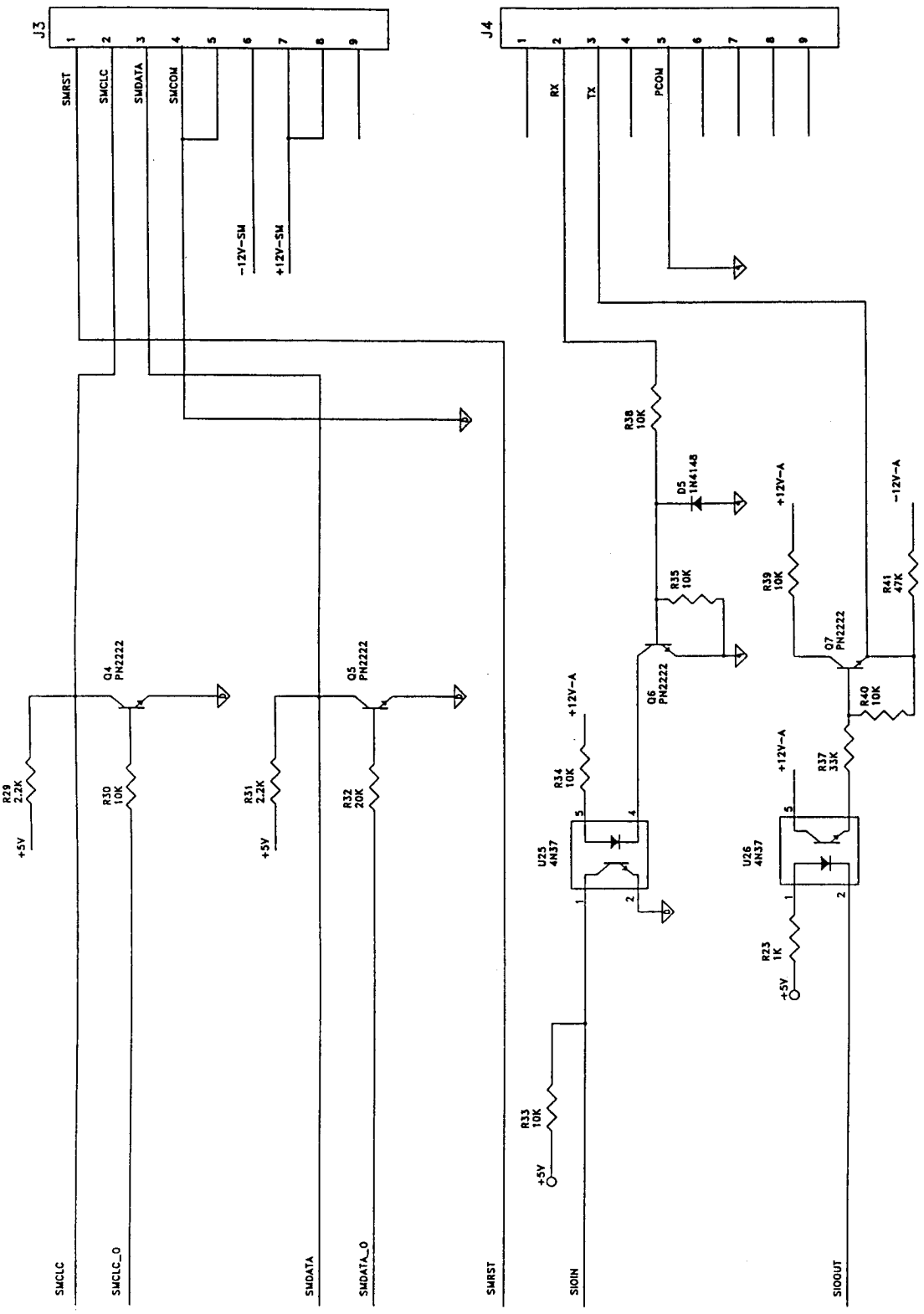


FIGURE 7.5: CONTROLLER MAIN BOARD SCHEMATIC DIAGRAM (SHEET 7 OF 7)